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The result of collective efforts of representatives of agencies, organizations, and institutions having an interest in nursing education in the state, the study was undertaken in the context of the long-range planning studies of the Board of Higher Education. Most of the data were provided by the Board of Nursing from annual reports submitted to that Board of schools of nursing. A mail questionnaire survey provided supplemental information concerning nursing school graduates and nursing students. Some findings were: (1) The number of registered nurses per 100,000 population in North Carolina rose from 236 in 1963 to 260 in 1966, as compared with a national figure of 306 in 1964, (2) In 1966, attrition rates averaged 44 percent in baccalaureate programs, 36 percent in diploma programs, 11 percent in associate degree programs, and 31 percent in practical nurse programs, (3) The average scores of graduates of four-fifths of the registered nurse programs were below the national level, while graduates of practical nursing programs performed relatively well on the licensing examination, (4) Failures on the licensing examinations are closely related to inadequate clinical resources and faculty, and (5) To attain the feasible goal of 18,200 registered nurses by 1975, schools must produce 1,400 nurse graduates each year. (JK)

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NURSING EDUCATION IN NORTH CAROLINA

Today and Tomorrow

RESEARCH REPORT 2-67 (DECEMBER 1967)
NORTH CAROLINA BOARD OF HIGHER EDUCATION
RALEIGH, NORTH CAROLINA

VT006697

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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NURSING EDUCATION IN NORTH CAROLINA
TODAY AND TOMORROW

December 29, 1967
North Carolina Board of Higher Education

SUMMARY HIGHLIGHTS

1. Most indicators of the nursing situation in North Carolina show the State below the national average. The number of registered nurses per 100,000 population in North Carolina rose from 236 in 1963 to 260 in 1966. However, the national ratio was 306 in 1964. The proportion of registered nurses with baccalaureate or higher degrees in North Carolina was 9.6 percent in 1966. The national figure was 11.3 percent in 1964.

2. Nearly 70 percent of the active nurses in North Carolina are employed by hospitals and other institutions. The proportion of hospital nurses has steadily increased, while the proportion of private duty nurses has decreased.

3. In 1966, attrition rates averaged 44 percent in baccalaureate programs, 36 percent in diploma programs, 11 percent in associate degree programs, and 31 percent in practical nurse programs.

4. The quality of nursing education programs for registered nurses in North Carolina leaves much to be desired. Graduates of about four-fifths of the programs for registered nurses had average scores on the licensing examination below the national average. On the other hand, graduates of practical nursing programs performed relatively well on the licensing examination.

5. Failures on the nurse licensing examinations are closely related to inadequate clinical resources and faculty.

6. The future need for nurses is seen in the expected increase of population and the increasing trend of hospital utilization. It is estimated that approximately 21,000 active registered nurses will be needed in North Carolina by 1975. Only 15,000 will be available by then, however, at the present production of 1,000 new graduates each year. The need of 21,000 by 1975 represents a more than 60 percent increase above the nurse supply level of 13,025 in 1966.

7. In view of the limited nurse student potential and inadequate clinical facilities, a more realistic goal for North Carolina is 18,200 registered nurses by 1975.

8. To attain this feasible goal, schools of nursing must produce 1,400 registered nurse graduates each year by 1975.

9. Unless plans for orderly and sound development of nursing education are implemented, even the feasible goal of 18,200 registered nurses by 1975 will be difficult to reach. This study recommends several courses of action to meet this goal, and minimum standards for nursing education programs. They are listed briefly on the next page and presented in detail in Chapter VII.

RECOMMENDATIONS FOR NURSING EDUCATION PROGRAMS

Courses of Action (pages 89-91):

1. Student recruitment should be intensified.
2. Enrollment in adequate programs should be expanded.
3. Inadequate programs should be upgraded.
4. Continuing education and refresher course programs should be expanded.
5. Programs with 50 percent of graduates failing over a period of three years the licensing examination for nursing should be phased out.
6. Graduate nursing education programs should be expanded. Master's degree programs should be undertaken only in institutions having adequate baccalaureate programs.

Minimum Standards (pages 91-94):

1. Hospital clinical resources should be sufficient at the various levels of nursing education to maximize exposure of students to a variety of patients and existing nursing situations: practical nursing education programs should use a hospital with at least a minimum daily average census of 60 patients and an operating room, a delivery room, a clinical laboratory and diagnostic X-ray; diploma or associate degree programs should use a hospital with an average daily census of 150 or above, with 7 or more facilities; and baccalaureate programs should use hospitals with an average daily census of 300 or above and with 12 or more facilities.

2. Enrollment in a nursing program should insure a ratio of at least five patients to each student receiving clinical experience in a given area or department of the training hospital at a given time.

3. Only in unusual circumstances should one hospital be used simultaneously by more than one program for registered nurses.

4. No program should be established in the absence of the availability of a primary hospital meeting the criteria on size and facilities.

5. The educational attainment of a faculty member should be at least one level more advanced than the level of nursing which she teaches, but not less than a baccalaureate degree.

PREFACE

This study of nursing education in North Carolina was undertaken in the context of the long-range planning studies of the North Carolina Board of Higher Education. This report is the result of collective efforts over a number of months of representatives of agencies, organizations, and institutions having an interest in nursing education in the State. These groups include the Medical Society of the State of North Carolina, the North Carolina Hospital Association, the North Carolina State Nurses' Association, the North Carolina League for Nursing, the North Carolina Board of Nursing, the Department of Community Colleges of the State Board of Education, the State Board of Higher Education, and several institutions that conduct nursing education programs.

Representatives of the above organizations, through membership on the Joint Committee on Nursing Education of the State Board of Higher Education and State Board of Education, outlined the purposes of this study and reviewed several drafts. Most of the groups named also provided financial assistance which made possible the employment of a consultant who assisted in the research and writing.

Acknowledgement and thanks are extended to members of the Joint Committee for their consultative assistance and to all who provided research, statistical, writing, and editing services: Mrs. Ida Harper Simpson of Duke University, and Eun Sul Lee of the Board of Higher Education staff, who prepared the initial draft; Miss Margaret Moore, a member of the Joint Committee on Nursing Education, who was particularly helpful at all stages of the study; and Dr. John F. Corey, Assistant Director of the Board of Higher Education, who edited the final report.

Howard R. Boozer,
Director of Higher Education

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CHAPTER I

INTRODUCTION

This is the third survey of nursing education in North Carolina to be published since World War II. The first was sponsored by the University of North Carolina and the North Carolina Medical Care Commission, and was published in 1950 (Nursing and Nursing Education in North Carolina, 100 pages). The second, directed by Ray E. Brown of Duke University, was published in 1964 under the sponsorship of the North Carolina Board of Higher Education, the State Board of Education, and the North Carolina Medical Care Commission (Report of Survey of Nursing Education in North Carolina, 40 pages). One of Brown's recommendations was that the Board of Higher Education and the State Board of Education appoint a Joint Committee on Nursing Education "in order to insure systematic planning for nursing education on a statewide basis."

In January 1965 the two Boards established the Joint Committee as recommended by Brown. In September 1965 the Committee, which initially limited its concern to nursing programs from which graduates are eligible to take the licensure examination for registered nurses, was requested by the State Department of Community Colleges to include practical nursing education. Such inclusion resulted in the entire spectrum of nursing education becoming the concern of the Joint Committee.

The membership of the Joint Committee includes representatives from the State Board of Higher Education, N. C. Board of Nursing, State Board of Education, State Department of Community Colleges, North

Carolina Hospital Association, Medical Society of the State of North Carolina, North Carolina State Nurses' Association, North Carolina League for Nursing, and several institutions that conduct nursing education programs in the State. The present members of the Joint Committee are:

Howard R. Boozer, State Board of Higher Education, Raleigh, Chairman
Mrs. Harry P. Horton, Pittsboro, State Board of Higher Education
Louise Bryant, R.N., State Department of Community Colleges, Raleigh
Miriam Daughtry, R.N., State Department of Community Colleges, Raleigh
Charles H. Frenzel, Duke University Medical Center, Durham
Mrs. Jesse Kiser, R.N., Central Piedmont Community College, Charlotte
John Ketner, North Carolina Hospital Association, Raleigh
Mrs. Eloise R. Lewis, R.N., University of North Carolina at Greensboro
Sister Jeanne Margaret McNally, R.N., Mercy Hospital, Charlotte
Margaret C. Moore, R.N., University of North Carolina
George W. Paschal, Jr., M.D., Raleigh
John M. Reynolds, Asheville, State Board of Education
Eugene J. Smith, R.N., Memorial Hospital, Charlotte
Mary McRee, R.N., North Carolina Board of Nursing, Raleigh
Isabelle Webb, R.N., Watts Hospital, Durham
Mrs. Jo Anne Paige, R.N., Dorothea Dix Hospital, Raleigh

The Joint Committee initiated this long-range planning study of nursing education in North Carolina in 1966. The study was developed under the general direction and auspices of the Joint Committee with the staff of the Board of Higher Education providing research, writing, secretarial, and other staff services. This report includes a description of the present status of nursing education in North Carolina, and suggestions and guidelines for the future development of nursing education in the State.

Most of the data on nursing and nursing education in the study were provided by the North Carolina Board of Nursing from annual reports submitted to that Board by the schools of nursing in North Carolina. A mail questionnaire survey by the Board of Higher Education provided supplemental information concerning nursing school graduates and characteristics of nursing students. This survey also provided information on the nursing school attendance patterns in the State in relation to county or state of residence.

The report of the Surgeon General's Consultant Group on Nursing was considered as a standard in projecting the future needs for nurses and needs for nursing education, in so far as the particular situation in North Carolina made it applicable.

Population estimates and projection data came from several sources. State total population figures were provided by the United States Bureau of the Census. The estimated and projected county population figures were obtained from other sources cited in this study. The projected number of high school graduates was obtained from a 1966 study by Dr. C. H. Hamilton of North Carolina State University, and Eun Sul Lee (Dr. Hamilton's assistant at that time). The original projection was not broken down by sex, therefore the projection of female high school graduates was obtained by applying the 1965 percentage of female graduates throughout the projection years.

Information concerning hospitals and their facilities was obtained from the 1965 "Guide Issue" of Hospitals, the journal of the American Hospital Association. Basic data used in analyzing hospitalization trends were taken from the Duke Endowment Annual Reports, 1960 through 1965.

All percentages presented in this study are rounded to the nearest tenth of one percent, with forced rounding to make percentage totals equal 100.0.

CHAPTER II

PRESENT PRACTICE OF NURSING IN NORTH CAROLINA

This chapter is an overview of the practice of nursing today in North Carolina. It focuses upon the number of nurses, the fields in which they practice, their educational attainment, migration and attrition patterns, geographic distribution, and other characteristics. This overview of nurses in practice and the overview of nursing education in Chapter III are intended to serve as both a description of the existing situation and a basis for determining what is required to meet the future demands on nursing education in North Carolina.

I. NUMBER OF NURSES

Since Brown's 1964 report on nursing education in North Carolina[1] the nursing situation in the State has improved in terms of total number of active nurses. Between 1963 and 1966 the number of active registered nurses increased from 11,300 to 13,025, a net increase of 1,725. This increase was almost twice the net increase of 997 during the previous comparable three-year period between 1960 and 1963 (see Table I).

This increase in nurse supply is attributed largely to the return of inactive nurses to the profession rather than to any pronounced increase in graduates from nursing education programs. Further, the increase is not as significant as the number indicates, since many inactive nurses returned to the profession on a part-time basis. According to an estimate of the American Nurses' Association, the number of nurses working part-time increased about 13 percent between 1962 and 1964, while the number working full-time increased only about four percent.[2] Data are not available in North Carolina for an analysis of the actual increase of full-time equivalent nurses.

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[1] Ray E. Brown, Report of Survey of Nursing Education in North Carolina (Raleigh: North Carolina Board of Higher Education, North Carolina Medical Care Commission, and North Carolina State Board of Education, 1964).

TABLE I

POPULATION AND ACTIVE REGISTERED AND PRACTICAL NURSES IN PRACTICE
NORTH CAROLINA, 1960-1966

		Active Registered Nurses		Active Licensed Practical Nurses		
Year	Total Population*	Total Number	Number Per 100,000 Population	Total Number	Number Per 100,000 Population	Ratio of LPN to RN
1960	4,556,155	10,303	226	3,589	79	0.35
1961	4,680,000	10,725	229	3,828	82	0.36
1962	4,737,000	11,045	233	4,035	85	0.36
1963	4,786,000	11,300	236	4,183	87	0.37
1964**	4,855,000	-	-	-	-	-
1965	4,914,000	12,321	251	4,867	99	0.40
1966	5,000,000	13,025	260	5,105	102	0.39

*Source: U. S. Bureau of the Census, Current Population Report, P-25, Nos. 324 (January 20, 1966) and 354 (December 8, 1966).

**Data destroyed by fire.

The number of active practical nurses increased from 4,183 in 1963 to 5,105 in 1966. The increase in the number of practical nurses was faster than that of registered nurses. The ratio of practical nurses to registered nurses increased from 0.37 to 0.39 during the three-year period between 1963 and 1966. Table I shows that the relative importance of practical nurses has steadily grown.

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[2] American Nurses' Association, *Facts About Nursing* (New York: American Nurses' Association, 1965), p. 7.

The number of registered nurses per 100,000 population for North Carolina was 260 in 1966, which is still far below the national average. The national ratio was 306 in 1964.[3] The number of practical nurses per 100,000 population for North Carolina was 102 in 1966, which was also below the national average (115 in 1960).[4]

II. FIELDS OF PRACTICE

Hospitals and other institutions employed 67.6 percent of all active registered nurses and 66.5 percent of active licensed practical nurses in North Carolina in 1966. The proportion of hospital nurses increased both in registered and practical categories, while the proportion of private duty nurses decreased in both categories. These trends are consistent with national trends.

In numerical importance next to hospital and private duty nurses are nurses in doctors' offices, accounting for 9.4 percent among registered nurses and 7.9 percent among practical nurses. Public health and school nurses together claim 6.5 percent of registered nurses. Nursing homes employ 4.9 percent of practical nurses. The number and percent of employed registered and practical nurses in various fields of nursing in 1966 are shown in Table II.

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[3] Ibid.

[4] Surgeon General's Consultant Group on Nursing, Toward Quality In Nursing: Needs and Goals (United States Department of Health, Education, and Welfare, Public Health Service Publication No. 992; Washington: United States Government Printing Office, 1963), p. 59.

TABLE II

NUMBER AND PERCENT OF DISTRIBUTION OF NURSES BY FIELD OF EMPLOYMENT, 1960 AND 1966

Field of Employment	1966		1960	
	Number	Percent	Number	Percent
Registered Nurses				
Hospital and Other Institutions	8,799	67.6	6,080	59.0
Private Duty	1,331	10.2	1,516	14.7
Office Nurse	1,222	9.4	1,029	10.0
Public Health and School	848	6.5	652	6.3
Nursing Education	513	3.9	392	3.8
Industrial	248	1.9	219	2.1
Other Specified Field	64	0.5	276	2.7
Field Not Reported	-	-	139	1.4
Total	13,025	100.0	10,303	100.0
Practical Nurses				
Hospital and Other Institutions	3,396	66.5	2,169	60.4
Private Duty	863	16.9	961	26.8
Office Nurse	402	7.9	272	7.6
Nursing Home	252	4.9	135	3.8
Public Health and School	3	0.1	15	0.4
Industrial	13	0.3	4	0.1
Other Fields	176	3.4	20	0.6
Field Not Reported	-	-	13	0.3
Total	5,105	100.0	3,589	100.0

III. EDUCATIONAL ATTAINMENT

The proportion of active registered nurses with baccalaureate or higher degrees increased from 7.9 percent in 1962 to 9.6 percent in 1966. In that four-year period the number of active registered nurses with baccalaureate degrees increased by 277, and the number with master's or higher degrees by 99. However, the proportion of nurses with college degrees in North Carolina is still lower than that of the nation as a whole, which was 11.3 percent in 1964 (see Table III).

TABLE III

EDUCATIONAL LEVEL OF ACTIVE REGISTERED NURSES IN NORTH CAROLINA, 1966 AND 1962

Educational Level	1966 Number	1966 Percent	1962 Number	1962 Percent	U.S. 1964* Percent
Master's or Higher Degree	238	1.8	139	1.2	2.3
Baccalaureate Degree	1,019	7.8	742	6.7	9.0
Diploma or Associate Degree	11,768	90.4	10,264	92.1	88.7
Total	13,025	100.0	11,045	100.0	100.0

*American Nurses' Association, Facts About Nursing, (New York: American Nurses' Association, 1965), p. 10.

IV. MIGRATION AND ATTRITION

Data are not available for a comprehensive analysis of migration patterns of nurses. It is believed that more nurses are going out of the State than are coming into the State. Table IV shows that the number of nurses endorsed out exceeds the number endorsed in. The highest net loss was recorded in 1963. The net loss since then has decreased.

On the basis of the last five years, the annual attrition rate for professional nurses was computed as 2.8 percent. In consideration of this plus the nationally estimated 0.2 percent loss of registered nurse power as the result of continuing education, this report employs a total annual attrition rate of three percent.[5] The attrition rate for practical nurses was computed as 4.2 percent. The higher attrition rate for practical nurses may be due to the higher proportion of older persons in the practical nurse population.

TABLE IV

NURSES LICENSED BY ENDORSEMENT AND ENDORSED TO OTHER STATES, 1961-66

	Registered Nurses			Licensed Practical Nurses		
Year	Endorsed In	Endorsed Out	Net Loss	Endorsed In	Endorsed Out	Net Loss
1966	612	676	44	85	116	31
1965	592	627	35	95	132	37
1964	496	560	64	88	102	14
1963	369	577	208	48	107	59
1962	374	510	136	72	84	12
1961	429	463	34	61	97	36

V. GEOGRAPHIC DISTRIBUTION

The 1965 ratios of registered nurses to 100,000 civilian population for North Carolina counties are shown in Figure 1, page 12. The ratios vary considerably from county to county. Fourteen counties had 300 or more nurses per 100,000 residents. The highest ratio was registered in Orange County (780). On the other hand, 28 counties had less than 100 nurses per 100,000 residents. For practical nurses the ratios vary from a high of 654 per 100,000 in Avery County to zero in Clay, Graham, Jones, and Tyrrell counties (see Table XXX, page 106).

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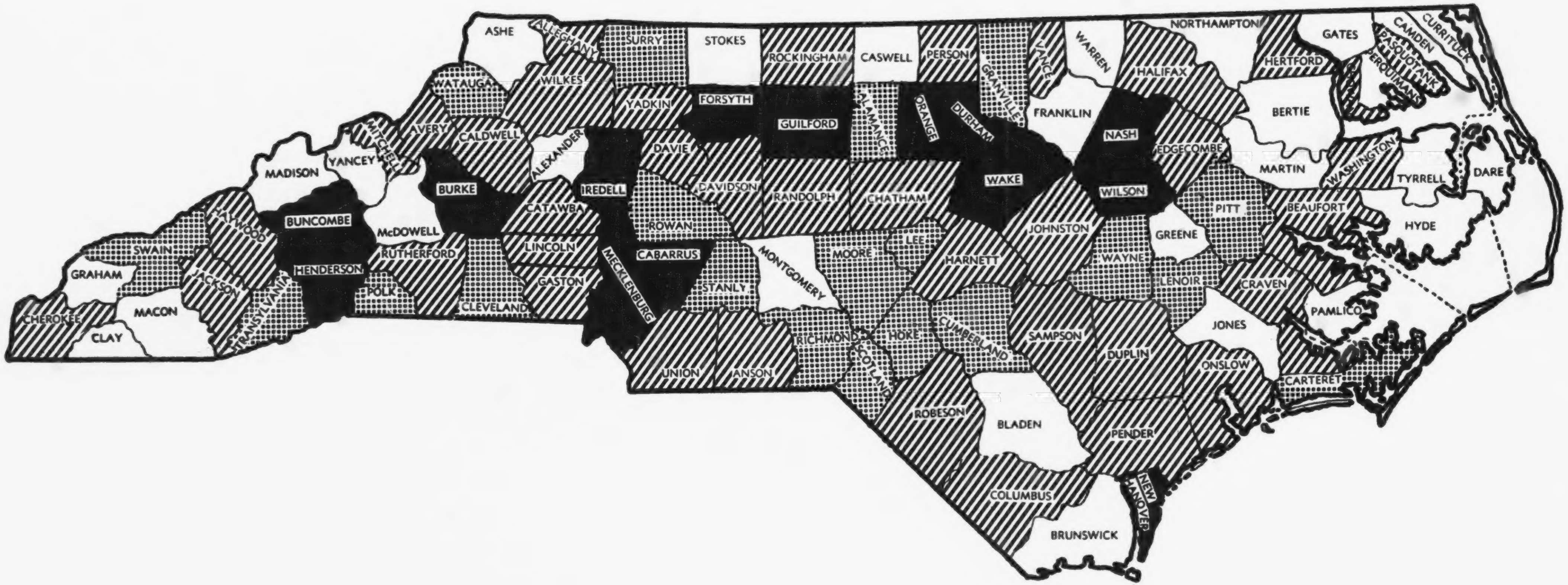
[5] Burton Meyer, "Development of a Method for Determining Estimates of Professional Nurse Needs," Nursing Research (New York: American Journal of Nursing, June, 1957), pp. 24-28.

It should be noted that counties with relatively few nurses do not necessarily have a greater need for more nurses than counties with a higher nurse-population ratio. In fact, the need is most likely greater in counties where the nurse-population ratio is higher. As seen in Table II, page 8, the majority of nurses are employed by hospitals and other institutions. Consequently, nurses concentrate where hospitals are located with the result that the geographic distribution of nurses is directly related to the geographic distribution of hospitals. This is further illustrated in Table V, page 13, which shows that counties with low nurse-population ratios have no hospitals or very small hospitals.

Figure 1. Active professional nurses per 100,000 population, 1965


ASHE
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GATES
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PASQUOTANK
PERQUIMANS
CURRITUCK
WATAUGA
WILKES
YADKIN
FORSYTH
GUILFORD
ALAMANCE
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DURHAM
FRANKLIN
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MARTIN
WASHINGTON
TYRRELL
DARE
MADISON
YANCEY
MITCHELL
AVERY
CALDWELL
ALEXANDER
IREDELL
DAVIE
DAVIDSON
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GREENE
HAYWOOD
SWAIN
GRAHAM
JACKSON
HENDERSON
RUTHERFORD
LINCOLN
CABARRUS
MONTGOMERY
MOORE
LEE
HARNETT
WAYNE
LENOIR
CRAVEN
CHEROKEE
CLAY
MACON
TRANSYLVANIA
POLK
CLEVELAND
GASTON
MECKLENBURG
STANLY
RICHMOND
HOKE
CUMBERLAND
SAMPSON
DUPLIN
JONES
PAMLICO
ONSLOW
CARTERET
UNION
ANSON
SCOTLAND
ROBESON
BLADEN
PENDER
COLUMBUS
NEW HANOVER
BRUNSWICK

Legend	Number of Counties
■ 300 and more	14
▦ 200 - 299	20
▨ 100 - 199	38
☐ Under 100	28
	100

TABLE V

NUMBER OF HOSPITALS AND NURSING HOMES IN THE 28 NORTH CAROLINA COUNTIES WITH FEWER THAN 100 NURSES PER 100,000 RESIDENTS

County	Hospital Number	Hospital Bed Size	Hospital Average Census	Nursing Home
Alexander	1	31	20	0
Ashe	1	50	37	0
Bertie	1	50	39	0
Bladen	1	60	35	0
Brunswick	1	50	30	0
Camden	0			0
Caswell	0			0
Clay	0			0
Currituck	0			0
Dare	0			0
Franklin	1	51	42	0
Gates	0			0
Graham	0			0
Greene	0			0
Hyde	0			0
Jones	0			0
McDowell	1	59	33	1
Macon	3	30 56 8	13 23 6	0
Madison	0			0
Martin	1	49	22	0
Montgomery	1	50	36	0
Northampton	0			1
Pamlico	0			0
Perquimans	0			0
Stokes	1	30	15	0
Tyrrell	0			0
Warren	1	35	9	0
Yancey	1	33	17	0

VI. OTHER CHARACTERISTICS

Age. The average age of practical nurses is higher than that of registered nurses. The average age of inactive nurses is slightly lower than that of active nurses, registered and practical (see Table VI). Active registered nurses in North Carolina are somewhat younger, on the average, than those of the nation. The median age of active registered nurses in North Carolina was 37.9 years in 1966 in contrast to the national median of 39.6 years in 1962. There has been a national trend of a steady rise in the age level of nurses.[6]

TABLE VI

AGE DISTRIBUTION OF REGISTERED AND PRACTICAL NURSES IN NORTH CAROLINA, 1966

Age Group	Registered Nurses Number Active	Registered Nurses Number Inactive	Practical Nurses Number Active	Practical Nurses Number Inactive
Under 30	3,853	679	1,077	264
30 - 39	3,352	1,083	1,063	262
40 - 44	1,488	372	580	123
45 - 49	1,275	229	641	119
50 - 59	2,146	394	1,049	233
60 and over	860	179	540	142
Not reported	56	22	155	38
Total	13,025	2,958	5,105	1,181
Median Age	37.9	37.3	42.5	41.8

Sex. There are proportionately more males engaged in practical nursing than in registered nursing. In 1966, 43 male registered nurses and 60 male licensed practical nurses were working in North Carolina. Nonetheless, males constitute less than one percent of the total nurse population.

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[6] American Nurses' Association, Facts About Nursing (New York: American Nurses' Association, 1965), p. 9.

Color. The proportion of nonwhite among active licensed practical nurses (24 percent) is almost the same as the proportion of nonwhite in the total State population (25 percent in 1960). On the other hand, only 6.6 percent of the active registered nurses were nonwhite in 1966.

Marital Status. It has been known that nursing is becoming more of a profession for married women. In 1966, almost 71 percent of all active registered nurses were married. It was also noted that more married nurses were in inactive status. This may reflect that many inactive nurses were performing child-rearing duties (see Table VII). Although data are not available, it is believed that the percent of nurses married is even higher among practical nurses.

TABLE VII

NUMBER AND PERCENT OF NURSES IN NORTH CAROLINA
BY SEX, COLOR, AND MARITAL STATUS, 1966

	Registered Nurses				Licensed Practical Nurses			
	Active		Inactive		Active		Inactive	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Sex								
Female	12,982	99.7	2,949	99.7	5,045	98.8	1,168	98.9
Male	43	0.3	9	0.3	60	1.2	13	1.1
Total	13,025	100.0	2,958	100.0	5,105	100.0	1,181	100.0
Color								
White	12,260	93.4	2,876	97.2	3,879	76.0	1,023	86.6
Nonwhite	765	6.6	82	2.8	1,226	24.0	158	13.4
Total	13,025	100.0	2,958	100.0	5,105	100.0	1,181	100.0
Marital Status								
Single	2,434	18.7	196	6.6				
Married	9,266	71.1	2,588	87.5	Not Available			
Other	1,325	10.2	174	5.9				
Total	13,025	100.0	2,958	100.0				

CHAPTER III

CHARACTERISTICS OF NURSING EDUCATION PROGRAMS AND STUDENTS IN NORTH CAROLINA

Nursing education as it exists today in North Carolina is described in this chapter. Identified and discussed are types of educational programs, locations of programs, philosophies of education, trends in admissions and graduations, student attrition, and student social characteristics. Resources of the educational programs, specifically in reference to facilities and faculty, are discussed at length as well as effectiveness of the programs as measured by performance of graduates on licensing examinations administered by the State Board of Nursing in Chapters IV and V.

I. TYPES OF PROGRAMS

The four types of basic educational programs presently available are (1) practical nurse, (2) associate degree, (3) hospital diploma, and (4) baccalaureate degree programs. The number of practical nursing programs increased from 21 in 1963 to 34 in 1966. The total number of programs from which graduates are eligible for the licensure examination for registered nurses remained about the same. Hospital diploma programs still predominate the programs for registered nurses, but the hospital schools have continued to decline while associate degree and baccalaureate programs in higher education institutions have increased (see Table VIII, p. 18).

TABLE VIII

NUMBER OF NURSING EDUCATION PROGRAMS IN NORTH CAROLINA

Programs Leading to	1963	1964	1965	1966	1967*
(1) Baccalaureate Degree	5	6	7	7	8
(2) Hospital Diploma	28	27	26	24	22
(3) Associate Degree	1	1	4	9	8
Subtotal	34	34	37	40	38
(4) Practical Nurse Certificate	21	24	30	34	36
Grand Total	55	58	67	74	74

*As of September, 1967

In addition to the above four types of basic programs, one baccalaureate program for registered nurses is offered in North Carolina. Four of the basic baccalaureate degree programs also admit registered nurses as students. At the present time two National League for Nursing accredited graduate programs which lead to the master's degree are available.

All the nursing education programs described above are approved or provisionally approved by the State Board of Nursing. Six of the hospital schools and four of the baccalaureate or higher degree programs are also accredited by the National League for Nursing.

II. LOCATIONS OF PROGRAMS

The 74 nursing education programs in North Carolina are located in 45 counties extending from Buncombe County in the west to Carteret County in the east. The location of each program by type is shown on the map in Figure 2 on page 20.

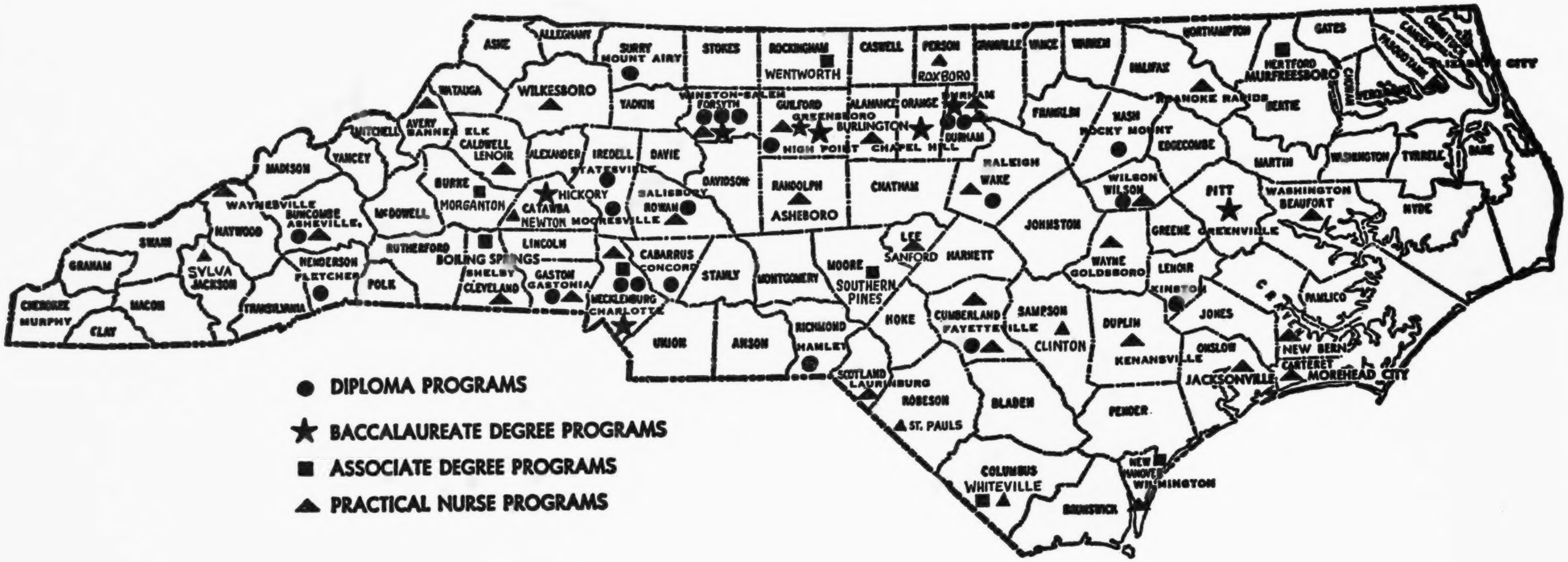
III. PHILOSOPHIES OF PROGRAMS

Three of the four types of educational programs for nurses in North Carolina enable graduates to qualify for licensure as registered nurses and one provides training in practical nursing. The goals of these programs are oriented toward the levels of responsibility which their graduates might be expected to undertake. The registered nurses' programs are the hospital diploma, the associate degree and the baccalaureate degree programs. There are also two graduate programs in nursing which offer advanced education to baccalaureate graduates.

Baccalaureate programs. These programs are based on a philosophy of educating nurses for generalized responsibilities. Students are taught technical skills of nursing, coupled with the general principles upon which the skills are based. Knowledge of general principles ideally equips the student to see nursing procedures and techniques as the application of theory and to modify or adapt nursing procedures according to the demands of situations. A theoretical approach prepares the nurse to think creatively about the demands of her work situation and organize resources expeditiously in dealing with them. Nursing in these programs is broadly defined, including depth of knowledge in the social, biological, and physical sciences, designed to prepare the student for responsibilities ranging from direct patient care to supervision of other nursing personnel. She should be prepared to make independent nursing judgments in both simple and complex situations and guide others in implementing them. The new areas of nursing arising out of changes taking place in health care involve responsibilities appropriate for a

FIGURE 2

LOCATION OF NURSING EDUCATION PROGRAMS IN NORTH CAROLINA, 1967


ASHE
ALLEGHANY
SURRY
MOUNT AIRY
STOKES
ROCKINGHAM
WENTWORTH
CASWELL
PERSON
ROXBORO
GRANVILLE
VANCE
WARREN
NORTHAMPTON
GATES
HERTFORD
MURFREESBORO
HALIFAX
ROANOKE RAPIDS
BERTIE
CHOWAN
PASQUOTANK
CAMDEN
CURRITUCK
ELIZABETH CITY
PERQUIMANS
WATAUGA
WILKESBORO
YADKIN
WINSTON-SALEM
FORSYTH
GUILFORD
GREENSBORO
HIGH POINT
ALAMANCE
BURLINGTON
ORANGE
CHAPEL HILL
DURHAM
FRANKLIN
NASH
ROCKY MOUNT
EDGECOMBE
MARTIN
WASHINGTON
TYRRELL
DARE
MITCHELL
AVERY
BANNER ELK
CALDWELL
LENOIR
ALEXANDER
IREDELL
STATESVILLE
DAVIE
DAVIDSON
RANDOLPH
ASHEBORO
CHATHAM
RALEIGH
WAKE
WILSON
WILSON
PITT
GREENVILLE
WASHINGTON
BEAUFORT
HYDE
MADISON
YANCEY
BURKE
MORGANTON
HICKORY
CATAWBA
NEWTON
MOORESVILLE
SALISBURY
ROWAN
JOHNSTON
GREENE
WAYNESVILLE
BUNCOMBE
ASHEVILLE.
McDOWELL
HAYWOOD
SWAIN
GRAHAM
SYLVA
JACKSON
HENDERSON
FLETCHER
RUTHERFORD
BOILING SPRINGS
LINCOLN
CABARRUS
CONCORD
STANLY
MONTGOMERY
MOORE
SOUTHERN PINES
LEE
SANFORD
HARNETT
WAYNE
GOLDSBORO
LENOIR
KINSTON
CRAVEN
PAMLICO
CHEROKEE
MURPHY
CLAY
MACON
TRANSYLVANIA
POLK
SHELBY
CLEVELAND
GASTON
GASTONIA
MECKLENBURG
CHARLOTTE
UNION
ANSON
RICHMOND
HAMLET
HOKE
CUMBERLAND
FAYETTEVILLE
SAMPSON
CLINTON
DUPLIN
KENANSVILLE
JONES
ONSLOW
JACKSONVILLE
NEW BERN
CARTERET
MOREHEAD CITY
SCOTLAND
LAURINBURG
ROBESON
ST. PAULS
BLADEN
PENDER
COLUMBUS
WHITEVILLE
NEW HANOVER
WILMINGTON
BRUNSWICK
● DIPLOMA PROGRAMS
★ BACCALAUREATE DEGREE PROGRAMS
■ ASSOCIATE DEGREE PROGRAMS
▲ PRACTICAL NURSE PROGRAMS

baccalaureate education. The baccalaureate programs are all on college and university campuses. There are eight in the state, two private and six state-supported.

Diploma and Associate Degree Programs. The hospital diploma and two-year college associate degree programs prepare students for the same level of responsibility, but they differ in their approach to and control of education. The hospital diploma program is established within an institution whose primary goal is service. The associate degree program is organized in an institution with a primary goal of education. In both the emphasis is upon technical proficiency in the skills and techniques of nursing. The associate degree program, which is relatively new, is usually found in the two-year college and includes general education in the physical sciences, social sciences, and humanities, along with the nursing curriculum. The diploma program is based in hospitals and focuses on experience combined with theory. These programs are less theory oriented than are baccalaureate programs, and while they include study of social, biological, and physical sciences the coverage is less thorough. The responsibilities for which these programs prepare students are more limited than are the responsibilities of the baccalaureate graduate and are primarily technical in nature. There are 22 diploma programs in the state and eight associate degree programs.

Practical nursing programs. These programs aim at preparing students mainly through supervised practice to apply nursing techniques, which tend to be standardized and require relatively little scientific knowledge. There are 36 practical nursing programs in the State.

Graduate programs. The goal of these programs is preparation for innovations in nursing through experimentation and synthesis. The requirement of a baccalaureate degree presupposes a background of knowledge and skill in nursing and in the sciences to enable a critical approach to nursing problems. Graduates of the higher degree programs, according to their specialized interests, are prepared to assume positions in administration and teaching as well as in the practice of nursing. The state has two accredited graduate programs.

IV. TRENDS IN ADMISSIONS AND GRADUATIONS

A gradual increase was noted in the total number of students admitted each year to various nursing programs. The number of students admitted to practical nurse programs increased more rapidly than those admitted to registered nurse programs.

The change in annual admissions to registered nurse programs varied with the type of program. Since 1960, annual diploma school admissions decreased by 15 percent, whereas associate degree programs admitted seven times as many students in the 1966 academic year as in 1960 and the baccalaureate programs admitted more than twice as many in 1966 as in 1960.

During the past six years, the annual number of graduates from practical nurse programs increased by 52 percent. The number of graduates from registered nurse programs remained relatively constant (see Table XXIX, page 105. The increase in annual admissions to recently established associate and baccalaureate degree programs was not yet reflected in the number of graduates (see Figures 3 and 4 on page 24).

V. STUDENT AND GRADUATE CHARACTERISTICS

Information on characteristics of students and graduates concerning sex, color, age, marital status, home base, year of high school graduation, and location of first employment is based on a mail survey conducted by the staff of the Board of Higher Education. Questionnaires were mailed to directors of 31 practical nursing programs, 26 diploma programs, seven associate degree programs, and eight baccalaureate or higher degree programs. Responses were received from 97 percent of the addressees. Only the director of one practical nursing program and of one diploma school program did not respond. All responses were used in the following analysis except Womack Army Hospital practical nurse program operated by the United States Army for enlisted men only. Since one diploma program and two practical nurse programs were not included in the survey, the absolute numbers reported in Table IX, page 27, and Table X, page 28, reflect a small error, but the percentages provide useful information.

Sex. Men comprised only 0.6 percent of all students enrolled in various nursing programs as of March 31, 1966. Diploma programs enrolled a higher proportion of men (0.8 percent) than did the baccalaureate (0.4 percent) and practical nurse (0.7 percent) programs. No men were enrolled in associate degree programs. This proportion of male students in North Carolina is lower than the national figure of 1.4 percent in 1963.[7] There were six male graduates (1.2 percent) in the academic year 1965-66 and all were graduates of diploma programs.

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[7] American Nurses' Association, Facts About Nursing (New York: American Nurses' Association, 1965), p. 80.

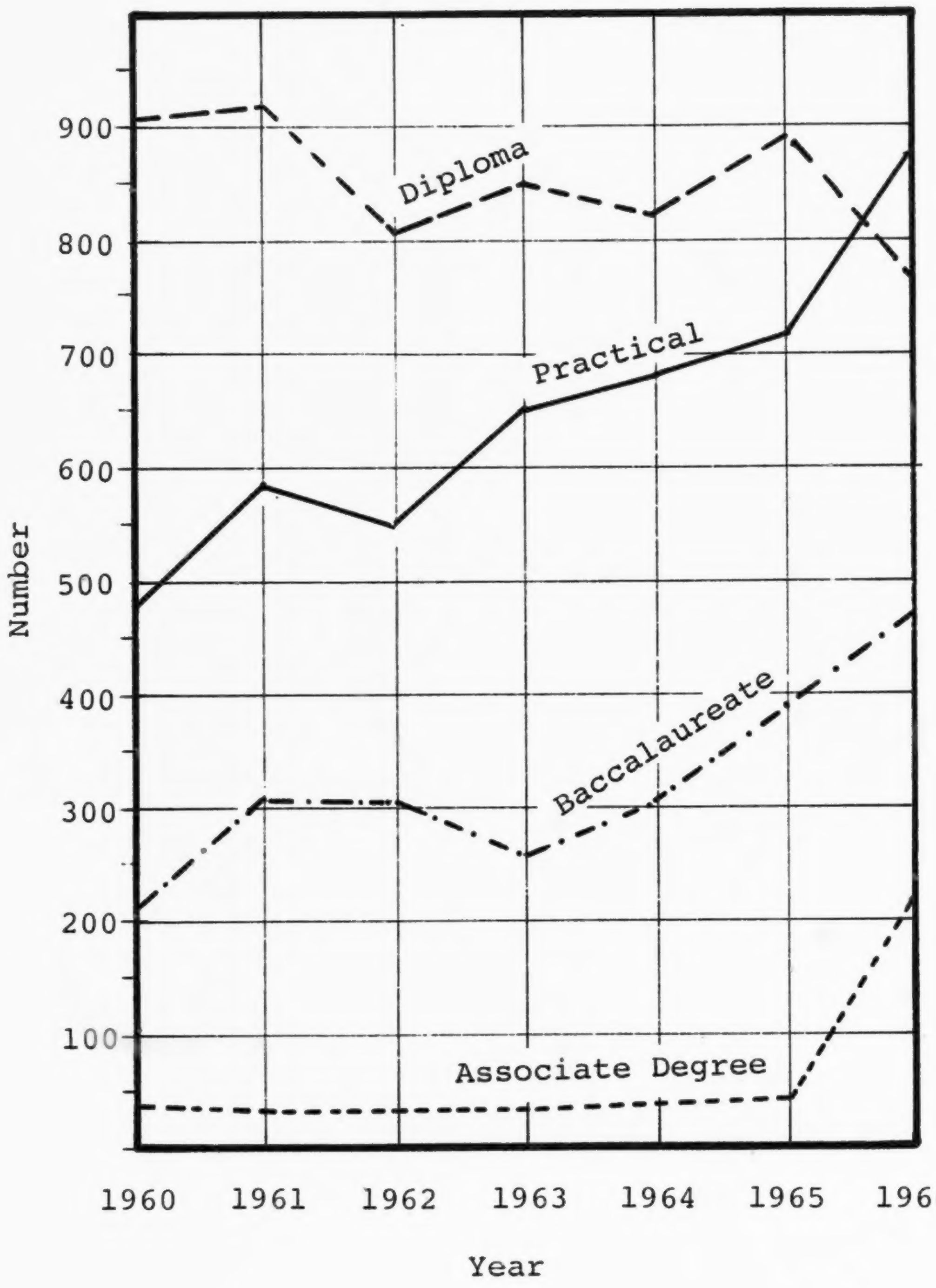

Figure 3. TRENDS IN ADMISSIONS TO EDUCATIONAL PROGRAMS IN NURSING EDUCATION IN NORTH CAROLINA, 1960-1966

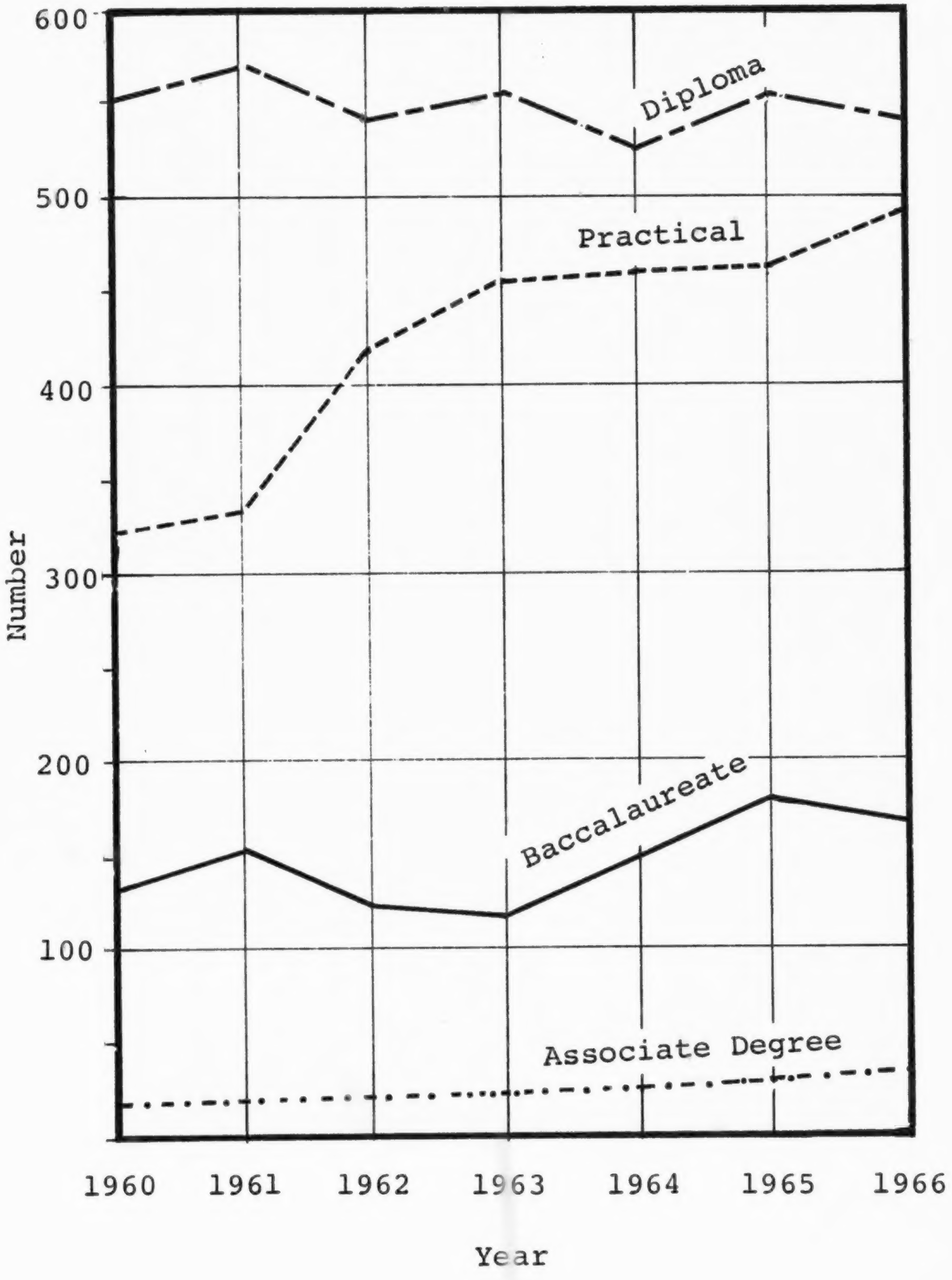

Figure 4. TRENDS IN GRADUATIONS FROM NURSING PROGRAMS IN NORTH CAROLINA, 1960-1966

Color. Nonwhite students constituted 13.7 percent of the total students enrolled in the four types of nursing programs. Licensed practical nurse programs enrolled the largest proportion of nonwhite students (28.9 percent). Nonwhite students enrolled in diploma and baccalaureate programs comprised 4.6 percent and 22.1 percent respectively of total students in these programs. A few nonwhite students were enrolled in associate degree programs.

Of the graduates from practical nurse programs, 24.8 percent were nonwhite; 24.3 percent of the baccalaureate program graduates were nonwhite. The proportions of nonwhite graduates in practical nurse and baccalaureate programs are almost the same as the proportion in the total State population. Of the diploma school graduates, only 6.4 percent were nonwhite.

Age. The age distribution of nursing students reveals that pratical nurse programs attracted more older people than other types of programs. In fact, the proportion of students 25 years old and over in registered nurse programs was about five percent, whereas this proportion was about 45 percent in practical nurse programs.

Marital status. Marital status of students is closely related to the age distribution. Thus, practical nurse programs had the highest percentage of married students (47.5 percent). Married students comprised 7.5 percent of the students enrolled in baccalaureate programs. The proportion of married students was 9.1 percent in three-year diploma programs and 10.8 percent in two-year associate degree programs.

Home base. Data on home residence of students from the four different types of nursing education programs in the State are summarized in Table IX, page 27. Detailed data are shown in Tables XXXII, XXXIII, and XXXIV, pages 112,115 and 117,respectively. More than 90 percent of the students in practical nurse programs come from the same county in which the programs are located or from adjacent counties. Associate degree and diploma programs drew students from broader areas in the State than did practical nurse programs. Out-of-State students in each of these two types of programs comprised about 15 percent of their total enrollment. Baccalaureate programs serve still broader areas in the State as well as some of the neighboring states. Fifteen percent of the total students in baccalaureate programs are from "in-county" or adjacent counties, 49 percent from other counties, and the remaining 36 percent from "out-of-state." In the baccalaureate programs in State-supported institutions out-of-state students comprise 18.9 percent of the enrollment.

Year of high school graduation. There were 976 North Carolina students who were 1965 high school graduates (see Table IX) in various nursing programs as of March 31, 1966. Of these 45.1 percent were in diploma programs, 24.7 percent in baccalaureate programs, 10 percent in associate degree programs, and 20.2 percent in practical nurse programs. The fact that more than one-fifth of the recent high school graduates in nursing education were in practical nurse programs should be considered in the projection of the need to recruit new students.

Location of First Employment. It has long been known that more well-educated people are migrating out of the State. This is also true in nursing. More than 50 percent of the baccalaureate degree graduates in

TABLE IX

CHARACTERISTICS OF STUDENTS ENROLLED IN NURSING PROGRAMS IN NORTH CAROLINA
AS OF MARCH 31, 1966

Characteristics	Practical Nurse Programs		Associate Degree Programs		Diploma Programs		Baccalaureate* Programs		Total		Master's Programs	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sex												
Female	597	99.3	194	100.0	1,651	99.2	1,026	99.6	3,468	99.4	18	100.0
Male	4	0.7	-	-	14	0.8	4	0.4	22	0.6	-	-
Color												
White	427	71.0	194	100.0	1,588	95.4	802	77.9	3,011	86.3	18	100.0
Non-white	174	29.0	-	-	77	4.6	228	22.1	479	13.7	-	-
Age												
Under 20	181	30.1	103	53.1	465	27.9	346	33.6	1,095	31.4	Not available	
20 - 24	147	24.4	83	42.8	1,171	70.3	629	61.1	2,030	58.2		
25 - 29	58	9.6	3	1.5	19	1.2	25	2.4	105	3.0		
30 - 39	103	17.1	2	1.1	9	0.5	23	2.2	137	3.9		
40 and over	112	18.8	3	1.5	1	0.1	7	0.7	123	3.5		
Marital Status												
Single	266	44.2	173	89.2	1,508	90.6	950	92.2	2,897	83.0	12	66.7
Married	291	48.4	21	10.8	151	9.1	77	7.5	540	15.5	6	33.3
Other	44	7.4	-	-	6	0.3	3	0.3	53	1.5	-	-
Home Base												
In-County	395	65.7	34	17.5	309	18.6	83	8.1	821	23.5		
Adjacent Counties	155	25.8	38	19.6	333	20.0	76	7.4	602	17.2	6	33.3
Other Counties	37	6.2	92	47.4	726	43.6	505	49.0	1,360	39.0		
County Unknown	-	-	-	-	39	2.3	-	-	39	1.2	-	-
Out-of-state	14	2.3	30	15.5	258	15.5	366	35.5	668	19.1	12	66.7
Total	601	100.0	194	100.0	1,655	100.0	1,030	100.0	3,490	100.0	18	100.0
Year of H. S. Graduation**												
1965	197		98		440		241		976			
1964	49		39		416		138		642			

*Including post-RN students
**In-State students only

Source: Survey, North Carolina Board of Higher Education

TABLE X

CHARACTERISTICS OF 1965 GRADUATES FROM NURSING EDUCATION PROGRAMS IN NORTH CAROLINA

Characteristics	Practical Nurse Programs		Associate Degree Programs		Diploma Programs		Baccalaureate Programs*		Master's Program	
	No.	%	No.	%	No.	%	No.	%	No.	%
Sex										
Female	476	100.0	NA**		514	98.8	173	100.0	25	100.0
Male	-	-	NA		6	1.2	-	-	-	-
Total	476	100.0	32	100.0	520	100.0	173	100.0	25	100.0
Color										
White	358	75.2	NA		487	93.6	131	75.7	23	92.0
Nonwhite	118	24.8	NA		33	6.4	42	24.3	2	8.0
Total	476	100.0	32	100.0	520	100.0	173	100.0	25	100.0
Began Practice in N. C.	440	92.4	NA		407	78.3	85	49.1	NA	

*Including post-registered nursing graduates
Source: Survey, North Carolina Board of Higher Education

**NA (not available)

1965-66 left the State. Forty-nine percent of baccalaureate degree graduates started their professional careers in North Carolina. The proportion of graduates remaining in North Carolina was 78 percent for diploma programs and 92 percent for practical nurse programs. However, the lower percentage of baccalaureate graduates remaining in the State is in part due to the higher proportion of out-of-state students enrolled in baccalaureate programs. The proportion of out-of-state students was 36 percent for baccalaureate programs and 16 percent for diploma programs (see Table IX on page 27).

VI. STUDENT ATTRITION

A significantly high percentage of students who enter nursing school does not complete the program. The proportions differ among schools. Although the attrition rate varies from year to year, in 1966 attrition rates averaged 44.2 percent in baccalaureate programs, 35.7 percent in diploma programs, 11.1 percent in associate degree programs, and 31.3 percent in practical nurse programs. There is some indication of a decrease in the attrition rate in associate degree and practical nurse programs.

TABLE XI

STUDENT ATTRITION RATES IN NURSING EDUCATION PROGRAMS
IN NORTH CAROLINA, 1962-1966

	Baccalaureate Programs	Diploma Programs	Associate Degree Programs	Practical Nurse Programs
1966	44.2%	35.7%	11.1%	31.3%
1965	42.7%	31.0%	30.0%	34.2%
1964	34.8%	43.1%	32.2%	35.4%
1963	55.9%	38.7%	41.4%	31.8%
1962	-	34.9%	46.9%	40.2%
Average	44.4%	36.7%	32.3%	34.6%

CHAPTER IV

CLINICAL RESOURCES* AND SUGGESTED STANDARDS

The areas of instruction which must be included in nursing education programs for registered and licensed practical nurses are set by statute. What is not set but which affects markedly the education of students is the calibre of the clinical facilities and the faculty, although _minimal_ criteria are established by the North Carolina Board of Nursing. This section suggests optimum standards for facilities and faculty and analyzes the present adequacy of the resources in North Carolina in relation to the suggested standards.

Standards for facilities. It is universally agreed that educational programs for nurses should be established only where adequate clinical facilities are available in reasonable proximity. The range and complexity of clinical facilities required vary for the several levels of nursing education. The suggested standards concerning facilities reflect the best judgment of those most knowledgeable in these matters.

Two characteristics of hospitals were selected and criteria for different programs have been evolved in reference to standards for clinical facilities. These include the average daily census of a hospital and its range of services and facilities. Average daily census rather than bed capacity has been selected since census may fall far short of bed capacity. Average daily census of hospitals has been grouped into three sizes: under 150 patients, 150 to 300, and 300 and over. Services and facilities of a hospital have been classified numerically: under seven, seven through 11, and 12 or more. See Table XII, page 33, for a listing of 16 facilities.

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*Analyses of resources are based on 1965 data.

The practical nurse program should use a hospital with an average daily census of 60 patients or more so long as it has an operating room, delivery room, clinical laboratory, and diagnostic X-ray, which are considered essential services.

Hospitals with seven or more services should be used by associate degree and diploma programs for clinical experiences. These services are established parts of patient care and clinical education without them would seem lacking. The average daily census of hospitals used by these programs should be at least 150 to assure a variety of patients.

Baccalaureate programs should be associated with hospitals with 12 or more services and a census of at least 300. These programs supposedly prepare students for extensive and intensive patient care and knowledge of the functioning of many services and clinical experiences based on carefully selected patients seem essential to baccalaureate nursing education.

The suggested number of facilities appropriate for the different nursing programs are somewhat less stringent than what a selected sample of faculty of these programs would choose. In contrast to the suggestion of 12 or more services, over 75 percent of the faculty of the nationally accredited collegiate schools in the state would specify 16. The faculty of the nationally accredited diploma programs also suggest a larger number of facilities. Over 50 percent feel that 12 or more facilities are needed for the diploma program. The faculty of the oldest associate degree programs in the state indicate seven through 11 services, which this report uses. At least 50 percent of the faculty raters agree with this number, but their agreement is weaker than among the diploma and the baccalaureate faculties. Over 50 percent of the faculty raters of the practical nursing programs agree that a hospital to be used for practical programs should have all the essential services which have been indicated on page 32 (see Table XII below).

TABLE XII

HOSPITAL SERVICES AND FACILITIES DESIRED BY FACULTIES OF DIFFERENT NURSING PROGRAMS FOR CLINICAL EXPERIENCES FOR THEIR STUDENTS*

Hospital Services and Facilities	Percentage of Faculty Desiring Service for Each Program			
	Baccalaureate (N**=32)	Hospital Diploma (N=26)	Associate Degree (N=26)	Practical Nursing (N=26)
Premature Nursery	96.9	73.1	50.0	38.5
Intensive Care Unit	100.0	80.8	57.7	30.8
Operating Room	87.5	80.8	57.7	61.5
Delivery Room	100.0	92.0	76.9	73.1
Psychiatric Unit	100.0	84.6	76.9	38.5
Emergency Room	87.5	61.5	50.0	34.6
Organized Out-patient Department	100.0	69.2	57.7	42.3
Clinical Laboratory	90.6	61.5	57.7	61.5
Pathology Laboratory	87.5	50.0	50.0	26.9
X-ray Diagnostic	90.6	61.5	57.7	57.7
Radioactive Isotopes	81.3	53.8	42.3	11.5
Electroencephalography	84.4	38.5	42.3	11.5
Physical Therapy	96.9	80.8	65.4	53.8
X-ray Therapy	90.6	65.4	53.8	19.2
Cobalt Therapy	78.1	38.5	34.6	3.8
Radium Therapy	90.6	53.8	53.8	11.5

*Faculty sample was drawn from the nationally accredited baccalaureate and diploma programs, the oldest associate degree programs and approximately half of the practical nursing programs in the State.

**N refers to the total number of faculty associated with a program.

TABLE XIII

HOSPITAL RESOURCES AVAILABLE TO NURSING PROGRAMS IN NORTH CAROLINA, 1966

Average Daily Census and Number of Facilities	Number of Hospitals* Used by Programs			
	Practical	Associate Degree	Diploma	Baccalaureate
Census less than 60				
Under 7 facilities	1	0	0	0
Census from 60 to 150				
Under 7 facilities	0	1	0	0
7 - 11 facilities	15	3	8	5
12 or more facilities	3	1	2	0
Census from 150 - 300				
7 - 11 facilities	1	2	1	0
12 or more facilities	13	1	13	1
Census over 300				
12 or more facilities	4	4	2	5

*The total number of general hospitals (excluding federal hospitals) used is greater than the number of programs because three baccalaureate, two diploma, three associate degree and four practical programs use more than one hospital.

In addition to the hospital, other health organizations and related organizations are used for educational experiences, including public health departments, nursing homes for the aged, and specialized hospitals. Their quality is obviously important in providing useful educational experiences. This report does not examine these resources, not to minimize their importance, but on the principle that any program that meets the above criteria would find unacceptable for training purposes organizations poorly staffed and operating ineffectively. The existence of such organizations in the locale of the general hospital and the college in which a nursing program is centered is an important consideration in planning for future education of nurses.

Adequacy of Facilities. The standards suggested in this report for hospital size and for number of facilities for different nursing programs are being met only by the practical nursing programs (see Table XIII). Only one practical nursing program uses a hospital failing to meet the criterion of a census of at least 60 patients. The baccalaureate programs with a few exceptions tend to use the poorest resources relative to the level of responsibility for which they train and in absolute measurement of daily census and number of facilities. Only three of the seven programs base all their clinical experiences in hospitals with censuses over 300 and at least 12 services. Four programs use hospitals with censuses under 150 and fewer than 12 services. Three of these four programs evidently try to compensate for inadequacies of resources by using more than one hospital for basic clinical experience. In one of these instances neither of the two hospitals used has a census over 150 or as many as 12 facilities. The other two programs use small hospitals and supplement experiences in hospitals which meet the suggested criteria.

Hospitals used by the programs for registered nurses tend to be deficient in both census and services. The hospitals used by the associate degree and diploma programs, however, average somewhat better relative to their objectives than those used by the baccalaureate programs. Five of the nine associate programs use hospitals with censuses over 150 and at least seven services considered necessary to provide the kind of clinical experience appropriate. Four of the programs use hospitals averaging under 150 patients; one of these hospitals also has fewer than seven services. Resources used by diploma programs tend to be more closely related to the suggested standards than in other registered nurse programs; yet, one-third (9 of 24) of these programs use hospitals with inadequate censuses.

Inadequate census would seem to impose severe restrictions on clinical experiences. The reasoning behind the standards suggested for census size is to insure enough patients to select clinical experiences necessary for instructional needs. Such does not seem possible for those programs which use the small hospitals. Assuming that the number of students receiving clinical experience in the hospital at any given time is not larger than 25 and the hospital census is 100, which is much above the average for small hospitals, only a potential of four patients might be expected from which to select clinical assignments for students. Even this ratio of patients to students at a given time is unlikely in the small hospital, since most clinical experiences for a program involve medical and surgical patients. The medical and surgical patients are used for more than one level of nursing instruction, and their use involves a high proportion of the total student body of a program. Virtually no selectivity of patients seems possible; in fact, the programs probably face difficulty in having sufficient patients to make any patient-oriented assignment. Using more than one small hospital would not overcome the size limitation to guarantee the kind of experiences students would need. Some hospitals tend to get a more limited range of types of patients because of their limited facilities and specialized medical staffs. The inadequacy of census is cause for concern among the non-baccalaureate programs for registered nurses, but alarming for the baccalaureate programs when the level of responsibility for which these programs supposedly prepare students is considered.

Of equal concern are the insufficient services of hospitals used by some of the baccalaureate programs. These programs aim to prepare their students for nursing involving depth knowledge of total functioning of a patient and for supervisory and administrative positions. A hospital with limited services cannot provide the learning opportunities for such highly responsible nursing.

The best hospitals tend to be used by more than one program. Therefore, the training situation in hospitals where resources meet the suggested standards tends to be less adequate than the resources of the hospitals would indicate. Fourteen of the practical nursing programs are using hospitals which also serve programs for registered nurses. Practical and registered nurse education programs might use the same hospital without disadvantage provided the census is at least 200.

The occurrence of more than one program for registered nurses in the same hospital, however, would seem of concern. Six hospitals in the state average a daily census of over 300; three of these are used by two different programs for registered nurses and one by three. Two hospitals with daily census ranging between 150 and 300 each provide resources for two programs. One hospital with average daily census less than 150 is used by two programs. The occurrence of more than one program for registered nurses in a hospital with a daily census of under 300 would create a demand for learning experiences greater than the hospital could supply.

The largest hospitals might be able to accommodate the number of students the different programs would put in them, but there is another drawback. For more than one program to occur in a hospital, a rigid scheduling and allocation of hospital facilities and patients for each program would be necessary. Such scheduling and allocation limit flexibility of the curriculum and may even limit the curriculum. Moreover, when students from different programs engage in activities with a hospital staff, members of the hospital staff are likely to confuse the students and be confused about what to expect from them. Such confusion undermines cooperative relations between the hospital staff and the school; cooperative relations facilitate a more effective environment for clinical experiences and aid instructional purposes. Thus, it would be desirable that no two programs which prepare students to become registered nurses should simultaneously use the same hospital.

Standards for faculty. Faculty qualifications are as crucial as hospital resources in the education of students. The education of the faculty of a nursing program should be more advanced than the level of nursing which they teach. The minimum faculty standard for a practical nursing, hospital, or associate degree program is the baccalaureate degree; for a baccalaureate program, the master's degree. The staff of a graduate program should have education beyond the master's.

Faculty of nursing programs. There were 513 registered nurses teaching in various nursing programs in North Carolina in 1966. Of these, 40 were in practical nurse education.

Some of the characteristics of nurse faculty members are shown in Table XIV. Relatively more single nurses are teaching in registered nurse than in practical nurse programs. Average age of nurse faculty in registered nurse programs is less than for faculty in practical nurse programs. Data also show that about 60 percent of total nurse faculty members had at least a baccalaureate degree with about 25 percent of all the faculty having the master's or higher degree. The academic preparation of nurse faculty in registered nurse programs was higher than the preparation of faculty in practical nurse programs. In registered nurse programs, about 62 percent of the nurse faculty had at least a baccalaureate degree, whereas in practical nurse programs, only 35 percent of the nurse faculty had at least a baccalaureate degree.

Problems in nursing education are seen in the academic preparation of nurse faculty and also in the shortage of faculty members. According to annual reports of nursing schools to the North Carolina Board of Nursing in 1966, there were 59 vacancies in authorized faculty positions in professional nurse programs; 39 in diploma programs, eight in associate degree programs, and 12 in baccalaureate programs.

One of the standards suggested for faculty qualifications is an educational achievement more advanced than the level of nursing which is taught. This standard is lower than the recommendation of the National League for Nursing which holds that only nurses with post-baccalaureate degrees should teach in nursing programs. The standard suggested in this report would permit baccalaureate graduates to teach in practical, diploma, and associate degree programs, but only nurses with more advanced degrees to teach in baccalaureate programs. The qualifications of faculties surveyed in this report were examined by averaging the education of the faculty of each nursing program. It was found that the above minimal standards are met only by the practical nursing programs and the associate degree programs.

Faculties of the diploma and baccalaureate schools tend to be inadequately prepared for their positions. For example, four of the seven baccalaureate programs have faculties with average preparation below the master's degree. Only three of the 24 diploma programs have faculties whose education levels average a baccalaureate degree or higher, and one-third (eight of 24) have faculties whose average education levels barely exceed a diploma in nursing. In fact, the faculties of the practical nursing programs tend to be as well qualified as those of diploma programs, and those of associate degree programs approximate the qualifications of faculty in baccalaureate programs, with the exceptions noted (see Table XV, page 41).

TABLE XIV

CHARACTERISTICS OF NURSE-FACULTY MEMBERS IN NURSING EDUCATION PROGRAMS IN NORTH CAROLINA, 1966

Characteristics	In Registered Nurse Programs		In Practical Nurse Programs		Total	
	No.	%	No.	%	No.	%
Marital Status						
Single	137	29.0	6	15.0	143	27.9
Married	288	60.9	33	82.5	321	62.6
Other	48	10.1	1	2.5	49	9.5
Total	473	100.0	40	100.0	513	100.0
Age						
Under 30	115	24.3	9	22.5	124	24.2
30 - 39	148	31.3	9	22.5	157	30.6
40 - 44	75	15.8	11	27.5	86	16.8
45 - 49	39	8.2	7	17.5	46	9.0
50 - 59	70	14.8	4	10.0	74	14.4
60 and over	24	5.1	-	-	24	4.7
Unknown	2	0.5	-	-	2	0.3
Total	473	100.0	40	100.0	513	100.0
Median Age	38.1		40.9		38.4	
Educational Attainment						
Master's or higher	127	26.8	1	2.5	128	25.0
Baccalaureate	167	35.3	13	32.5	180	35.1
Less than baccalaureate	179	37.9	26	65.0	205	39.9
Total	473	100.0	40	100.0	513	100.0

TABLE XV

AVERAGE EDUCATIONAL ATTAINMENT OF FACULTIES IN NURSING EDUCATION PROGRAMS IN NORTH CAROLINA, 1966*

Educational Attainment	Number of Programs			
	Practical Nursing	Hospital Diploma	Associate Degree	Baccalaureate
Little or no work beyond diploma	15	8	0	0
Substantial work toward Bachelor's	11	13	0	0
Bachelor's and some work beyond	3	3	3	1
Bachelor's and substantial work beyond	1	0	3	4
Master's or higher	0	0	3	2
No information	4	0	0	0
Total number of programs	34	24	9	7

*Based on a composite of annual reports to the North Carolina Board of Nursing.

A concurrence of faculty qualifications and hospital resources is evident among baccalaureate programs. The four baccalaureate programs with less adequate hospital resources have less well qualified faculties. This relationship of faculty qualification and hospital resources suggest that in establishing baccalaureate programs more is involved in staffing than faculty salaries, however important these may be. Studies of academic job changing show that quality staff consider only positions in quality institutions.[8] If the resources of a nursing program are poor, qualified faculty are not likely to be interested in working in the program, even at a salary considerably higher than offered by better nursing schools. This is the pattern in academic departments in colleges and universities. Prestige of the department, which is based on quality, is considered of greater importance than salary. Only if prestige is not affected does salary become a crucial concern in academic job-changing.

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[8] See for example, Theodore Caplow and Reece J. McGee, The Academic Marketplace (New York: Basic Books, Inc., 1958).

Another consideration pertaining to faculty in planning for future nursing education is the ratio of students to faculty. This question along with hospital resources, is central to determining the sizes of student bodies of schools of nursing. In the existing programs student-faculty ratios range from slightly over two students for each faculty member to over 17 students for each faculty member. Associate degree programs tend to have the highest ratio, an average for all programs of slightly over 10 students for each faculty member, and practical programs average the lowest, seven students for each faculty member. Diploma programs average slightly under eight students and baccalaureate programs slightly over eight students for each faculty member.

The proper ratio of students to faculty would seem to depend on the approach of the school in preparation of students. If the school emphasizes learning mainly through supervised experience, a relatively low ratio would seem appropriate; the faculty member would need to instruct students in principles as well as techniques during the clinical experience. Practical nursing programs follow this approach and would, therefore, seem to need a low student-faculty ratio. If, however, clinical experience is viewed more as a laboratory for practice in application and integration of nursing techniques and principles, a relatively high ratio of students to faculty might obtain without impairing learning by students. In the latter case, students enter clinical experience knowledgeable about the techniques and principles involved in their clinical experience; they thus need less direct supervision. The relationship of student-faculty ratio to learning, which is the crucial concern in the question, is explored later.

CHAPTER V

EFFECTIVENESS OF NURSING EDUCATION PROGRAMS

All graduates from nursing education programs must be licensed to practice by an examination administered by the State Board of Nursing. The examination results of first-time writers (excluding repeaters) are summarized in Table XVI, below. The number of practical nurse licenses issued to first-time writers gradually increased, while the number of registered nurse licenses issued slightly decreased. It should be noted that several new associate and baccalaureate degree programs had not graduated students as of 1966.

The results of examinations have been better for the practical nurse candidates than for the registered nurse candidates. More than 90 percent of practical nurse candidates passed the examination, while less than 80 percent of registered nurse candidates (except in 1963) passed. In 1966 about one out of four registered nurse candidates did not pass the licensing examination.

TABLE XVI

NEW LICENSES ISSUED BY EXAMINATION TO FIRST-TIME WRITERS IN NORTH CAROLINA, 1961-65

	Professional Nurse			Practical Nurse		
Year	Number Wrote	Number Licensed	Percent Licensed	Number Wrote	Number Licensed	Percent Licensed
1966	641	462	72.1	554	515	93.0
1965	678	514	75.8	537	497	92.6
1964	683	521	76.3	480	444	92.5
1963	644	536	83.2	456	419	91.9
1962	641	479	74.7	429	386	90.0
1961	698	556	79.6	325	299	92.0

Nursing programs vary widely in their preparation of students as registered nurses. Minimal standards of preparation are guaranteed by licensing laws, which require that the graduate pass a State board examination in nursing to practice as a nurse. Since mistakes in nursing may have serious consequences, the State must assure the public that an applicant for a nursing position is sufficiently knowledgeable to give safe nursing care. Passing scores on the licensing examination represent the minimum level of competence at which safe nursing care might be expected; yet a majority of graduates from eight of the 30 programs for registered nurses were unable to perform at this minimal standard. The licensing examination does not measure quality of nursing performance. In 1966 two baccalaureate and six diploma programs had more graduates failing than passing the licensing examination. In only two of the six baccalaureate and four of the 24 diploma programs did at least 90 percent of the graduates pass the licensing examination and become registered nurses (one baccalaureate and eight of the nine associate degree programs had not graduated any students)

When the level of performance indicated by the average scores of graduates from a program is considered, the picture is bleak concerning the education of students who wish to become registered nurses. The average scores of graduates from each program ranged from 352 to 582 and the mean score for the state was 489.4 in 1965-66. This is far below the national average of 513.6. The average scores of graduates of four-fifths of the programs were below the national average. Graduates of a few of the schools, however, did well.

In marked contrast to this picture of inadequate preparation given by programs for registered nurses is that of the practical nurse programs. None of them was characterized by a high percentage of failures. The state average score for the practical programs (504.4) almost equalled the national average (513.8) in 1965-66.

Nursing education for students who plan to become registered nurses in North Carolina is not good; as indicated above in only two of the six baccalaureate programs did high percentages of the graduates pass. Considering the level of responsibility for which these programs supposedly prepare students, no graduate should fail. For failures to occur indicates a marked disparity between educational goals and the preparation of students to meet them. Why do programs fail to prepare their students as nurses? Answers to this question are found in what the program offers students--its resources--and in the ability and motivation of students. The ability and motivation necessary for successful achievement are supposedly screened in entrance requirements. If a student with insufficient ability or motivation is admitted, it is a reasonable expectation that she will fail to graduate (see Table XI for attrition rates of students). The resources of a school are crucial. Where these resources are inadequate, the preparation of students as indicated by their performance on State board examinations is weak.

Practical nurse programs. It is seen above that practical nurse education programs more than any others meet the suggested standards for hospital resources. With one exception, they are conducted in hospitals having an average census of 60 patients and at least four facilities including an operating room, a delivery room, a clinical laboratory, and diagnostic X-ray. The quality of these hospital resources used by the practical nurse programs is reflected in the performance of graduates on the State licensing examination. No program had less than 73 percent of its graduates passing; 18 had over 90 percent; and 10 had 100 percent passing (see Table XVII, page 49). The program with the lowest percentage passing, 73 percent, was centered in a hospital averaging a census of less than 60 patients. These programs are generally highly successful and indicate the educational wisdom of utilizing hospital resources adequate for the level of preparation aimed at by the program.

It has been seen also that the education of the faculty of the practical programs, although falling short of the standard of a baccalaureate degree, is more advanced relative to the level of preparation aimed at than is found among the other programs. Comparison of the percentages of graduates passing the State licensing examination from different programs, classified by the average education of the faculties of the programs, shows virtually no difference between programs where faculties average little and substantial work toward a Bachelor of Science degree (see Table XVII, page 49). What the test performance of graduates of practical programs shows is good preparation for nursing at that level. Resources of these programs are good relative to their objectives and their students are motivated to take advantage of the learning opportunities the programs offer.

Diploma programs. The effects of hospital resources on educational preparation of graduates of diploma programs is marked. As the census and number of facilities of the hospital used by a program increased so did the percentage of its graduates passing the State board examination. Out of 10 programs using hospitals of under 150 census, only one had more than 80 percent of its students passing, five had more graduates failing than passing, and the others rated between these extremes. Eleven programs used hospitals having a census of 150-300 and more than 12 facilities. Of these 11 programs, six had over 80 percent passing the examination and only one had over 50 percent failing. All three

TABLE XVII

HOSPITAL RESOURCES, FACULTY QUALIFICATIONS AND PERFORMANCE ON STATE BOARD EXAMINATION AMONG GRADUATES OF PRACTICAL PROGRAMS*, 1966

Hospital Census and Number of Facilities	Number of Programs With: 70 - 80 Percent Passing	80 - 90 Percent Passing	Over 90 Percent Passing	Mean Score on Examination	Total Programs
Census under 60					
Less than 7 facilities	1	0	0	437	1
Census 60 to 150					
Less than 7 facilities	0	1	0	423	1
7 - 11 facilities	0	2	6	494	8
12 or more facilities	1	0	2	513	3
Census 150 to 300					
7 - 11 facilities	0	0	1	485	1
12 or more facilities	0	2	6	516	8
Census over 300					
12 or more facilities	0	1	3	486	4
Faculty Qualifications					
None or little work toward B.S.	0	4	10	493	14
Substantial work toward B.S.	2	1	7	497	10
B.S. or work beyond	0	1	2	528	3

*Practical nurse programs excluded from this analysis are six programs which have no board exam scores and an Army nursing program. Information on the number of hospital facilities was not available for one program. When more than one general hospital is used by one program, the one with the biggest census was used.

diploma programs in hospitals having a census of over 300 and more than 12 facilities had over 80 percent of their students passing (see Table XVIII, page 51).

The exceptions to the general relationship of hospital census and facilities to preparation of students should not be ignored. They suggest that a program may compensate for inadequate resources or fail to utilize fully its resources for education. Planning for the future, however, should not be based on the exceptional cases, but on strong relationships that are demonstrated to be true.

The influence of hospital resources on quality of nursing education demonstrated in this study is also indicated in the national accreditation of hospital programs by the National League for Nursing. No hospital used by a nationally accredited hospital program averages a census of under 250.

In only three diploma schools did the average education of the faculty equal a baccalaureate degree. In looking at the effect of education of faculty on performance of students, this survey was restricted because of limited variation in the qualifications of the faculty among the diploma schools. This assessment, therefore, is between the eight programs where faculties average only a diploma or slightly better and the other sixteen programs in which average education of the faculty is higher but does not exceed a baccalaureate. These two groupings of programs in terms of faculty qualifications, which vary little, differ only slightly in the percentages of their students passing (see Table XVIII). When the average scores their students made on the State board examination are considered, the graduates from programs with the less

TABLE XVIII

HOSPITAL RESOURCES,* FACULTY QUALIFICATIONS, AND NUMBER OF PROGRAMS WITH VARYING PERCENTAGES OF GRADUATES PASSING STATE BOARD EXAMINATION AMONG DIPLOMA PROGRAMS, 1966

	Number of Programs with Varying Percentages of Graduates Passing				
	Less than 50 Percent	50 - 80 Percent	More than 80 Percent	Total Programs	Mean Score on Examination
Hospital Resources					
Under 150 census 7-11 facilities	5	3	1[a]	9	406
Under 150 census, 12 or more facilities	0	1	0	1	400
Census of 150-300, 12 or more facilities	1[a]	4	6	11	482
Census over 300, 12 or more facilities	0	0	3	3	509
Faculty Qualifications					
Little or no work beyond a diploma	2	3	3[a]	8	454
Substantial work toward a BS degree	4[a]	5	7	16	480

a represents cases which deviate from the relationship

* Three programs used more than one general hospital; two used hospitals differing in characteristics. The hospital in which most of its clinical experiences are centered was selected for this analysis.

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well trained faculty had a mean score of 454 compared with a mean score of 480 for students whose faculties had on the average a larger proportion of members with baccalaureate degrees. This higher mean performance strongly suggests that the better educated faculty present a more thorough and comprehensive coverage of nursing.

The extent to which students, particularly those less able, learn the knowledge presented in lectures, may be influenced by whether or not their clinical experiences call for use of substantive and theoretical classroom knowledge. The four programs with more graduates failing than passing the State Board examination, among the 16 with faculties averaging a baccalaureate or having had substantial work toward one, were associated with hospitals having the lowest census; and with one exception, the three programs with more than 80 percent of their students passing, among the eight with the least qualified faculties, used hospitals with an average census of over 150. Thus, faculty qualifications and hospital resources interact in student preparation. A fairly adequate faculty can hope to succeed in preparing most of its students only when its resources are adequate; an inadequate faculty might partially compensate for its limitations by having good hospital resources. For a program to justify its existence it should have a qualified faculty and good resources; otherwise, there is tremendous waste of students' time and money, and of other resources used in its operation.

The above analysis excludes associate degree programs, as eight of the nine programs had not graduated any students as of 1966.

Baccalaureate programs. In their performance on State board examinations, graduates of baccalaureate programs vary as markedly as do the graduates of diploma programs. The reader is reminded that minimum success on this examination is defined as the lowest level of preparation commensurate with safe nursing practice. As with diploma programs, no graduates of baccalaureate programs, which supposedly prepare students for levels of nursing responsibility greater than diploma programs, should fail. Yet in only two of the six schools with graduates in 1966, did 100 percent of the graduates pass. Two of the schools ranked lowest among all schools in percentages of their students passing. In two schools, over 75 percent of the graduates passed, but one of these was surpassed by six diploma schools in percentage of students passing and the other was outranked by 11 diploma schools.

The average examination scores achieved by graduates of each baccalaureate program are related to the percentages from the programs passing the State board examination. The two schools with the lowest percentages passing were in the bottom quartile of average scores; the school surpassed by 11 diploma programs in percentage passing was at the upper end of the third quartile of average scores, and the other three programs were in the fourth quartile, one near the lower end and two at the upper. The range of scores in the programs in the fourth quartile, however, was considerably greater than within the other three quartiles; only the two schools with 100 percent of their graduates passing were at the upper end of this quartile. The two schools with outstanding performance used hospitals with a census of over 300 and more than 12 facilities and had faculties whose typical member had a master's degree. In the other schools the resources included small hospitals with few facilities and faculties whose combined education averaged less than a master's degree.

While educational resources of the schools relate to the performance of their students, their entrance requirements also seem to be involved. The selectivity of students varies among the schools. Three schools admit only students who score at a specified level on the College Entrance Examination Board tests. These three schools ranked highest in the percentages of their students passing and in the average scores of their graduates. The two schools with the lowest percentages of their students passing are in colleges whose student bodies average the lowest scores on College Entrance Examination Board tests. The low performance of students from these two schools, therefore, seems to be influenced as much by low entrance standards as by resources of the schools. Higher entrance requirements seem to insure fewer failures, but predict top performance less well. The two schools with 100 percent of their students passing both have entrance standards, but the school with the highest admissions standards had an average score of 550 on the State board examination compared with an average score of 582 for the other school.

What this analysis suggests is a lack of standards for nursing education in North Carolina. The number of graduates who fail, especially in the baccalaureate programs, can only be assessed as a tremendous waste of time, effort and money by students in poor programs and by the public and private organizations which support them. Neither the number of nurses nor the quality of their education can be increased by continuing poor programs or establishing other poor ones. Wherever possible, assistance should be given to programs whose hospital resources and faculty are unequal to preparation of students at a level of responsibility commensurate with the goals of such programs. Only by improving the resources of nursing education can the number of nurses be increased and the quality of nursing education improved.

Student-faculty ratio. A factor which may affect the distribution of opportunities provided by the resources of a program and thus, indirectly, its effectiveness, is its student-faculty ratio. It has been shown that the number of students per faculty member varies, with associate degree programs averaging the highest ratio and practical nursing programs the lowest. Since only one associate degree program had graduates in 1966 and since the ratio of students to faculty in the baccalaureate and diploma programs averaged about the same (eight to one), the baccalaureate and diploma programs are combined for the purpose of determining the effect of student-faculty ratio on performance on State Board examinations.

The baccalaureate and diploma programs which were at and below the median ratio of students to faculty, which was almost eight students per faculty member, averaged 68 percent of their students passing the State board examination with an average score of 478, programs which had eight or more students for each faculty member (ones above the median ratio of students to faculty) averaged 67 percent of their students passing with an average score of 478 (see Table XIX). Student-faculty ratio thus had no effect on preparation of students.* Among the practical nurse programs a slight tendency toward better performance on State boards occurred at the schools below the median ratio of students to faculty (see Table XX). Schools with fewer than eight students for each faculty member (below median number) averaged a score of 499 compared with 496 for the schools with eight or more students for each faculty member (at and above the median number): the percentage of students passing, however, was virtually the same, 93 percent for the former and 92 for the latter. It can be concluded that student-faculty ratio had no effect on performance of practical nurse students on the State licensing examination.*

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*Between student-faculty ratio and average board examination score, the Spearman rank correlation coefficient was -.21 with df =28 and $P > .10$.

It was thought that the ratio of students to faculty might influence preparation of students in the practical nurse programs. A slight tendency for average scores of programs to decline as ratio of students to faculty increased was seen, but the scores were so high among those with the highest ratio that the slight depression of scores did not indicate a significant lower preparation of students. It should be realized, however, that in none of the practical nursing schools was the ratio of students to faculty members sufficiently high to prevent the faculty from giving considerable personal attention to students.

This finding that a high ratio of students to faculty members does not adversely affect preparation of students may have crucial importance for educational planning. The easiest and cheapest way to increase educational opportunities for nursing is through expansion of the best programs. For example, the baccalaureate program having the highest average score on the State board examination has a ratio of 5.6 students per faculty member, its resources are among the best in the State. Every

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*The Spearman rank correlation coefficient was -.22 with df = 25 and $P > .10$.

TABLE XIX

STUDENT-FACULTY RATIO AND PERFORMANCE ON STATE BOARD EXAMINATION AMONG GRADUATES OF BACCALAUREATE AND DIPLOMA PROGRAMS, 1966

	Number of Programs With Passing Percentage				
Student-Faculty Ratio	Less than 50%	50-80%	More than 80%	Mean Score	Total Program
Under 8	3	5	7	478.3	15
8 and over	5	4	6	478.1	15

TABLE XX

STUDENT-FACULTY RATIO AND PERFORMANCE ON STATE BOARD EXAMINATION AMONG GRADUATES OF PRACTICAL NURSE PROGRAMS, 1966

	Number of Programs With Passing Percentage				
Student-Faculty Ratio	Less than 50%	50-80%	More than 80%	Mean Score	Total Program
Under 8	1	2	11	499	14
8 and over	1	4	8	496	13

effort should be made to encourage this school, which is State supported, to increase its enrollments. Programs with poor resources and which have high percentages of their students failing are strongly urged to not attempt expansion; expanding them will lead only to increased failures and further waste of students' time, effort, and money; and by all means these programs should not attempt to establish post-baccalaureate programs.

The number of students a faculty member might instruct is not unlimited. A faculty member is responsible to the hospital for the nursing care given by her students during clinical experiences. The number of patients for whom a faculty member might reasonably assume responsibility is limited, and therefore so is the number of students whom she might instruct in the hospital. Another limitation involves ease of contact between the student and her instructor. Mechanical devices, such as intercom systems, might be used to facilitate contact, but these cannot displace direct interpersonal contact.

CHAPTER VI

FUTURE NURSING IN NORTH CAROLINA

An analysis of the trends in population growth, health care, and other factors affecting nursing indicates the demands for services that nursing will face in the future. An examination of these indicated demands makes possible a projection of the number of nurses that will be needed to meet the demands, a projection of student potential, and a projection of educational potential. These projections, in turn, serve as a rational base for establishing future goals of nursing education.

I. FACTORS AFFECTING DEMANDS FOR NURSING

A number of factors affect the future demands for nursing. They include population growth, nursing responsibilities, nurse work patterns, and the needs of hospitals, private nursing, home health services, nursing homes, and public health departments.

Population growth. The increased need for nurses is seen in the current and projected increase in the State's population. North Carolina's population was estimated at 5,000,000 in 1966. This represents an increase of 444,000 or 9.7 percent in the six years since the 1960 census, when the State population was counted as 4,566,155. It is projected that the State population will increase to 5,111,000 in 1970 and to 5,336,000 in 1975. It is further projected that the State population will reach six million by 1980.[9] The projections, made by the United States Bureau of the Census, assume that the birth rate will drop substantially from the present level and North Carolina's net migration rate of the 1955-60 period will continue throughout projection periods. But the more recent trend of slowing out-migration from the State might contribute more to the State population growth.

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[9] United States Bureau of the Census, Current Population Reports, Series P-25, No. 326 (Washington Government Printing Office, February 7, 1966).

It has been suggested that the need for nurses in North Carolina should be based on the "norm" set by *The Report of the Surgeon General's Consultant Group on Nursing*. It maintains that by 1970 a minimum of four active nurses for every 1,000 population will be needed to give adequate nursing care. To do so, however, would ignore the basis of employment of nurses, which is organizations concerned with health care. North Carolina's need for nurses thus depends upon the positions nurses hold in organizations of health care. With the exception of private duty nursing, nurses are employees of organizations, not autonomous workers directly serving the public. Planning for future nurses, therefore, involves assumptions about the positions nurses will be expected to fill and the pattern of their responsibilities. This means that many areas of North Carolina need but cannot fully use the nationally recommended ratio of four nurses per 1,000 population by 1970 because of a lack of organizations for the delivery of health care.

Hospital employment. Most nurses in North Carolina work in hospitals and other institutions. Two shifts in the employment of nurses occurred from 1960 to 1966: hospital and institutional employment increased slightly while private duty nursing decreased slightly (see Table II, page 8). The need for nurses in hospitals is likely to increase further in the next decade.

Hospitalization of patients is increasing. Data gathered by the Duke Endowment, which include 88 percent of the general hospitals in the State and 93 percent of patients hospitalized, show that from 1960 through 1965 the rate of hospitalization increased by four percent or from 142 patients per 1,000 population to 147. During the five year period the number of patients rose by 13 percent. The rate increase indicates that people tend to use hospitals more today than in 1960.

Concurrent with the increased use, the average length of hospitalization of a patient increased from a little over six days in 1960 to almost seven days in 1965, an increase of almost one full day. Considering the number of patients in hospitals, any extension of hospitalization adds measurably to hospital demand. The increased use, coupled with the growth of population, suggests a continued growing need by hospitals for nursing services.

The nature of the rate increase in hospitalization is important for future planning of nursing needs. The rate increase arises out of growth in hospitalization of the aged. The rate of hospitalization of individuals under 14 and between the ages of 14 and 64 remained constant in the five year period while the rate for individuals age 65 and over increased by 44 patients per 1,000 total population.

The type of patients changed little; the only noticeable shifts were a slight decline of obstetrical patients and a slight increase of medical patients as percentages of the total (see Table XXI, page 62).

TABLE XXI

RATES OF HOSPITALIZATION OF TYPES OF PATIENTS FROM 1960 THROUGH 1965*

	Rates per 1,000 Population		
Types of Patients	1960	1963	1965
Medical	45.6	48.2	50.3
Surgical	23.0	23.0	24.2
Gynecological	7.9	8.0	8.2
Eye, Ear, Nose and Throat	7.1	7.6	7.9
Urological	6.3	7.0	7.4
Orthopedic	6.7	7.4	7.7
Obstetrical	23.6	22.8	20.8
New born (excl. still births)	18.6	18.1	16.6

*Rates are defined $\left(\frac{\text{number of patients}}{\text{population}} \times 1{,}000\right)$. Population data are taken from United States Census of Population, 1960: PC(1), 35A and 35B; and Current Population Reports, Series P-25, No. 354, December 8, 1966. Data on patients are taken from Duke Endowment Annual Report, 1960, 1963, and 1965.

Increase in the hospitalization of older persons is associated with longer life expectancy for the average person and the concomitant growth of the percentage of the elderly in the population. This population trend, in addition to bringing added pressures on hospitals, is encouraging the development of nursing homes. Longevity is increased through improved medical care and virtually all older people are in need of frequent health attention. Their care is more extensive partially because degenerative processes are at a peak. The nursing home is a response to the extensive care needs, the demand for which will be furthered through provisions of Medicare. Medicare has enabled more of the elderly to receive health care. In 1967 there were 96 nursing homes in North Carolina, a rate of 0.26 per 1,000 individuals age 65 and over. Only 34, however, are approved to receive patients under Medicare. Working in these nursing homes were 209 registered nurses and 224 practical nurses. A fairly rapid increase in the number of nursing homes can be expected and accordingly an increase in the demand for nurses to staff them.

Larger hospitals. Along with an increase in hospitalization is a trend toward larger hospitals. This trend will affect the nature and level of responsibilities of nurses and the kind of education appropriate for these responsibilities. The larger hospital seems to be an outgrowth of scientific and technological innovations in health care. A scientific and technological approach to health care requires much equipment and many occupational specialists. Small hospitals are unable to finance these. Once occupational groups and technology are established in a hospital, it is considerably cheaper to expand the services of that hospital than to establish new hospitals. With such expansion the ecological unit which the big hospital serves also expands. Its clientele and its identity are more the general public than the community where it is located. This trend toward the larger hospital appears evident in North Carolina.

In 1965, there were 137 general hospitals (excluding Federal hospitals) in the State. Their quality, however, varied. Forty-four lacked accreditation by the Joint Commission on Accreditation of Hospitals.

Information is available on the bed capacity of 137; together they had 17,085 beds or about three beds per 1,000 population. Most of the hospitals are small: 31 had fewer than 50 beds, 41 had between 50 and 100 beds, 30 had a bed capacity between 100 and 150, 23 had a bed capacity between 150 and 300, and 12 had 300 or more beds. Most of the hospital beds, however, are in the 35 hospitals with a bed capacity of 150 or more. These hospitals include 58 percent of the hospital beds in the state, and 60 percent of the average daily census of hospitals, which was 12,874 in 1965.

Use of the beds in hospitals varied markedly; only 60 percent of the hospitals in the state averaged a daily census of 70 percent or more of their beds. Use of the beds was sharply affected by the size of the hospital; as size of hospital increased so did the percentage of the average daily census of bed capacity. Of the 31 hospitals with a bed capacity of less than 50, only 32.2 percent averaged a daily census of 70 percent of bed capacity, compared to 100 percent of the hospitals with a bed capacity of 300 or more (see Table XXII, page 65, for detailed information on the relation of size of hospital to use of hospital).

Big hospitals are used more than small hospitals. This higher use is related to the larger number of facilities of the big hospitals. The number of facilities tended to increase with size of the hospital. Facilities include premature nursery, intensive care unit, operating room, delivery room, psychiatric unit, emergency room, out-patient department, clinical laboratory, pathology laboratory, diagnostic X-ray department, radioactive isotopes, electroencephalography, physical

TABLE XXII

HOSPITAL* SIZE AND THE RELATION OF AVERAGE DAILY CENSUS TO BED CAPACITY, 1965

Hospital Size by Bed Capacity	Total Hospitals	Census Less than 50% of bed Capacity	Census 50-60% of bed Capacity	Census 60-70% of bed Capacity	Census over 70% of bed Capacity
Under 50 beds	31	25.8	22.6	19.4	32.2
50 to 100 beds	41	12.2	7.3	24.4	56.1
100 to 150 beds	30	3.3	13.3	13.3	70.0
150 to 300 beds	23	0.0	8.7	17.4	73.9
300 or more beds	12	0.0	0.0	0.0	100.0

*General hospitals excluding Federal hospitals.

therapy, X-ray therapy, cobalt therapy, and radium therapy. Of the hospitals with a bed capacity under 150, 39 percent had fewer than seven of these facilities, as contrasted with four percent of the hospitals with a bed capacity between 150 and 300. Hospitals having 12 or more of the facilities include four percent of those with bed capacity under 150, 52 percent of those with bed capacity between 150 and 300, and 100 percent of those with bed capacity of 300 or more (see Table XXIII, page 66, for data on the relation of bed capacity of a hospital to its facilities). Since size of the hospital is related to its services, the use of the hospital can be expected to increase with facilities. Such is the case. Only 44 percent of hospitals with fewer than seven facilities had average daily census of at least 70 percent of bed capacity, compared with 62 percent of the ones with seven to 11 facilities, and 86 percent of those with 12 or more facilities (see Table XXIV, page 66).

TABLE XXIII

BED CAPACITY AND NUMBER OF FACILITIES OF HOSPITALS,* 1965

Bed Capacity of Hospital	Percentage Having Facilities: Under Seven	Seven through 11	12 or More	Total Hospitals
Under 150 beds	39.2	56.9	3.9	102
From 150 to 300 beds	4.3	43.5	52.2	23
300 or more beds	0.0	0.0	100.0	12

*General hospitals excluding Federal hospitals.

TABLE XXIV

NUMBER OF HOSPITAL* FACILITIES AND THE RELATION OF AVERAGE DAILY CENSUS TO BED CAPACITY, 1965

Number of Facilities	Percentage of hospitals whose daily census is 70% or more of bed capacity	Total Hospitals
Under 7 facilities	43.9	41
7 - 11 facilities	61.8	68
12 or more	85.7	28

*General hospitals excluding Federal hospitals.

The pattern of greater use of the large hospital is likely to result in a change in the function of small hospitals. Diagnosis and treatment are increasingly dependent upon special facilities and technical apparatus, which small hospitals so often lack. Their function is thus likely to change. Many may become associated with a larger hospital or hospitals.

These findings have implications for nursing education. Small hospitals appear inadequate for clinical use by nursing programs, especially by programs which prepare registered nurses. Clinical experiences should ideally involve contact with a variety of patients. Small bed capacity in itself poses limitations, but the limitation is increased by the lesser use of small hospitals. Moreover, their limited facilities greatly restrict opportunities for varied application of nursing principles and acquisition of knowledge of many current patterns of diagnosis and treatment. Facilities represent the scientific and technological approach to health care; nursing education should be geared to this approach.

What is happening in the movement toward large hospitals resembles the consolidation of public schools. The consolidated school displaced local schools to the benefit of education. Not only was quality improved, the very number of students in a school system increased over the number previously attending the schools displaced by the consolidated one.

The analogy holds in the growth of the large modern hospital. The large hospital will provide more extensive health care and more varied facilities for nursing education while taking care of more patients and allowing for a larger number of students of nursing. Even though the State has fewer hospitals than in 1960 the number of days of patient care, the number of patients, and the number of nurses have increased.

Public health departments. Another health care organization which it is anticipated will be developed more fully in North Carolina is public health departments. In 1965 there were 81 departments in the State including one city department, 69 county departments, and 11 districts composed of from two to five counties. The western and northeastern parts of the state were most lacking in staff. These areas are sparsely populated, but the very sparseness adds to cultural insulation, which may inhibit awareness of health needs. The need for increasing public health services in the relatively isolated counties seems critical. The number of nurses needed in them may be as great as in counties more densely populated. With a scattered population the case load would need to be lower because of increased travel time.

Eleven counties have two public health offices. The establishment of branch offices, it is hoped, will be accelerated especially in counties with more than one sizable city. A public health department, because of the nature of its work, should be highly accessible to and integrated in its community. For example, its educational functions are in large part dependent upon its visibility to the public.

It is hoped that there will be a marked increase in the establishment of public health facilities. In 1965 there were only 700 nurses working in public health, a bare five percent of the nursing labor force. It is assumed a flourishing public health system in the State would greatly increase demand for public health nurses.

Changes in nursing responsibilities. Nursing labor is divided up among different personnel with varying formal preparation to correspond supposedly to the nature of their responsibilities. The dividing line between categories of personnel is not fixed; it shifts in response to changes in health care, to the bureaucratization of employing organizations (which add supervisory functions), and to the professional organizing of categories of the nursing staff. The shifts are ever current and involve a continual upgrading in the level of responsibility of nurses and the transference of less responsible tasks (ones which require less education for performance) to other personnel, such as housekeepers and nurses' aides. The structure of this division of nursing labor and its continual upgrading appears to underlie the definitions given by the American Nurses' Association in its Position Paper concerning levels of nursing responsibility and the preparation needed for them.

The practical nurse is prepared to give patient care not based on highly technical and scientific knowledge. The graduates of hospital diploma and associate degree programs are prepared to give direct patient care. The baccalaureate graduate receives a more general education, preparing her to provide general nursing care and to make independent nursing judgments in complex situations, to work in public health nursing, and to assume supervisory and administrative positions, including those of head nurse, team leader, and supervisor of a nursing home. High level administrative positions concerned with planning and management of nursing in health agencies, and positions in educational programs require post-baccalaureate education in nursing. Ideally these responsibilities should be limited to nursing and nursing education rather than generalized services. An examination of the trends in nursing discussed above, from the perspective of these levels of nursing responsibility, indicates to an extent the future education nurses will need. The following suggests existing and emerging patterns of responsibilities to guide educational planning.

Large hospitals are bureaucratically and professionally organized. The administrative function of nurses is increased by their performing administrative services not directly related to nursing. The nursing division of a hospital includes more of the labor force of the hospital than any other division. However, there is currently a trend toward shifting the general administrative functions to non-nursing. To coordinate and plan nursing functions and to integrate these with other functions of the hospital calls for a sizable administrative staff. Nurses staff these positions and thus make up a significant proportion of the administration of hospitals. The movement toward larger hospitals in the State will increase the need for nursing administrators, who will need education beyond the bachelor's degree. In general, baccalaureate graduates would qualify as head nurses and team leaders.

In this total process of change in health care, medicine is passing on to nursing, or is desirous of doing so, some of its responsibilities. If the tasks transferred to nurses by medicine involve general responsibility, the kind of education that a bachelor of science degree in nursing or even higher gives is needed. If, however, the tasks passed on to nursing deal only with the application of technology, technical training such as that received by diploma and associate degree graduates would suffice.

Still another trend which is increasing the need for baccalaureate nurses is the development of nursing homes for geriatric patients. Many of the nursing routines may be performed by practical nurses, but a baccalaureate nurse, according to standards of the American Nurses' Association, should head the nursing staff to evaluate problems of patient care.

The need for baccalaureate nurses to staff nursing positions in departments of public health has been repeatedly pointed out. The diverse responsibilities of the public health nurse, spanning the total patient, his home, and his community, require the kind of knowledge only the bachelor of science degree gives. According to Ray Brown, only 16 percent of public health nurses in 1963 had received a baccalaureate education.[10] Not only should there be an expansion of public health nursing but also improvement in the qualifications of nurses in the field.

Nurses employed by non-health organizations, including public schools and industries, ideally would have received a baccalaureate education, but such preparation would seem less critical than for public health nursing. Their responsibilities involve mainly dealing with accidents and illness which might be met through technical preparation. In case of serious illness the families of patients seen in these non-health organizations are alerted, and in case of family inattention public health departments may be enlisted. In 1965 there were 73 nurses working in schools and 235 in industries; some increase in need but not a big demand may be expected.

Patterns of health care do not reveal any new functions for technically trained nurses (diploma and associate degree graduates). These are the nurses who may be seen mainly as manning the nursing units of our hospitals of tomorrow. The extent of need for them will depend on the modernization of hospitals in the State; large hospitals need large nursing staffs. However, new areas of nursing are emerging within the large hospitals.

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[10] Ray Brown, Report of Survey of Nursing Education in North Carolina (Raleigh: North Carolina Board of Higher Education, North Carolina Medical Care Commission, and North Carolina State Board of Education, July, 1964), page 8.

The technological and scientific changes taking place in health care, represented in many specialty services and facilities of the modern hospital, will require more technical and scientific knowledge on the part of nurses. For example, intensive care units are becoming established parts of the modern hospital. Nurses play an integral role in these units; they are responsible for administering technical apparatus and for observing the total functioning of patients. The application of technical apparatus is highly skilled and considerable scientific preparation is essential to observe physiological functioning. The technical preparation given in diploma and associate degree programs would seem the goal in staffing such a unit. Practical nurses with lesser training might be taught to administer technical instruments used in patient care, but they are less likely to be knowledgeable enough in total physiology to alert the medical staff to problems in functions not so directly related to the technology being applied.

The division of labor between technically trained nurses and practical nurses is tenuous. Many technical routines are performed by practical nurses in all hospitals, but exactly which ones vary by hospital. Relatively routine nursing activities which are patterned by technical apparatus would seem appropriate to delegate to practical nurses. A continued trend in the use of technical apparatus to standardize nursing procedures may be expected, and accordingly an increased need for practical nurses will be indicated. The ratio of practical nurses to registered nurses has steadily increased: in 1954 there were three practical nurses to every 10 registered nurses, in 1965 the ratio had risen to four practical nurses to 10 registered nurses (see Table I, page 6). The dividing line between registered and practical nurses is not and should not be irrevocably drawn; any tasks the responsibility for which might be lessened through use of technical apparatus might be passed on to practical nurses. For example, with the development of medical technology, physicians are asking auxiliary staff to make many of the diagnostic tests on their patients.

Any tasks registered nurses might pass on to practical nurses will relieve some of the pressures on registered nurses to function at higher levels of responsibility. As practical nurses assume more of the technical nursing responsibilities--and every indication points to this tendency--an upgrading in their education will be called for along with an increase in their number.

Another area which has shown little change in North Carolina, but in which it would seem appropriate for practical nurses to serve in place of registered nurses, is that of the office nurse who assists physicians in private practice. Office nurses mainly administer technical procedures; practical nurses might assume these tasks or a new category of office nurse might be educated for this position.

Practical nurses are tending to displace registered nurses in private duty practice. This study found approximately a four percent loss of registered nurses in private duty from 1960 to 1965 and a corresponding gain of approximately 10 percent in practical nurses. This trend is likely to continue.

In summary, for all nurses in North Carolina an upgrading in their level of responsibility is seen. The elevation of responsibility for the diploma and associate degree graduates is expected to arise out of the growing technical and scientific base of nursing, occasioned by the technological and scientific changes taking place in health care. New areas of functioning are expected to add to the level of responsibilities of the baccalaureate graduates. Practical nurses are likely to assume many duties now performed by registered nurses. The absolute demand for nurses will depend on developments in health care organizations. Assuming an acceleration in the establishment of nursing homes, public health departments and relatively large hospitals, and the changing role of smaller hospitals, North Carolina will continue to have a great need for practical nurses and for staff nurses, which the American Nurses' Association sees as being prepared in the diploma and associate degree programs. The need for baccalaureate graduates is especially pressing in order to provide faculty for the programs which prepare staff and practical nurses.

Increasing the number of baccalaureate and non-baccalaureate educated registered nurses and of practical nurses commensurate with need is an ideal; short of this, better nursing in the State might be obtained through enhancing the quality of education offered by all nursing programs. The quality of nursing will obviously depend on the quality of education, but the very number of nurses will also be affected. A nurse adequately educated to assume her responsibilities and to deal with non-routine affairs is more likely to give high-quality performance than several inadequately trained nurses. Another way in which nurses might be used more effectively is through more imaginative and flexible staffing. For example, in employing new graduates administrators might take into account the education of applicants and their performance as students, and place the better educated in the more responsible positions.

Career patterns of nurses. Another consideration bearing on planning for educational needs for nursing pertains to the career patterns of nurses. North Carolina needs nurses. It may hope to meet this need by attracting nurses from other states, by educating its own nurses, and by attracting inactive nurses to the labor force. It is not reasonable to expect that all nurses who are educated within the State will work in North Carolina or even work at all. Nor should any local community believe that all nurses educated within its boundaries will work there. Career patterns of nurses, like those of all women, involve much physical mobility and are discontinuous. Where most women work is determined by the employment of their husbands. The young adult male population is highly mobile and, therefore, their wives are mobile. It can be expected that a high percentage of nurses educated within North Carolina will work elsewhere. Some of this loss will be offset by the employment of nurses educated in other states, but North Carolina is likely to continue to export nurses (see Table VI, page 14). North Carolina ranks relatively low in opportunities for employment of skilled and white collar workers, the men nurses tend to marry. This study found that in 1965 the majority of nurses employed in North Carolina (69.4 percent) were married. The quality of our health organizations will affect the attraction of unmarried nurses into the State and may also influence the enlisting of inactive married nurses living in the

State into the labor market. The State can be expected to do no better in attracting married nurses from other states than in attracting their husbands for other kinds of employment.

Of the nurses North Carolina will have, fewer will pursue a continuous than discontinuous career. The work pattern of married women is to work until they have children but leave the labor force after the first child is born. Many re-enter after their youngest child is in school. While we do not know the proportion of inactive nurses in North Carolina who have left the labor force for child-bearing, we can make some fairly good guesses from their age distribution. The average mother of a completed family in 1960 had given birth to her last child by the age of 27. That youngest child would be in school when the mother reached her mid-thirties, the time at which a large share of mothers re-enter the labor force. Others wait until their children are older to go back to work and re-enter the labor force in their forties.*

Judging from the age distribution of active and inactive nurses described in Table VI, page 14, these general patterns seem to apply to nurses in North Carolina. Even though the age groupings are not divided around these child-bearing responsibilities, they do show that the percentage of inactive nurses within an age group levels off and is virtually the same for nurses age 45-49 and 50-59; approximately 14 percent of the nurses in these two age groups were inactive, a percentage assumed to represent the hard core of inactive nurses. In the 40-44 age group, 19 percent were inactive; almost 24 percent of the 30-39 age group were inactive and about 15 percent of the nurses under 30 were inactive. Assuming that the 30-39 and 40-44 age groups are the most affected by child-bearing and that about 14 percent of all nurses in each will never re-enter the labor force, it can be expected that about 10 percent or 415 of the nurses from the ages 30 to 39 will re-enter the labor force after having been inactive, most within the next decade. Most nurses in the 40-44 age group who will re-enter the labor force have done so; only about five percent (82) of the nurses can be expected to return to work and these will re-enter even sooner than the younger inactives. The category of nurses under 30 includes almost 15 percent who are inactive and have evidently begun child-bearing; but this group also contains a high percentage who have not yet but will later become mothers (which cannot be estimated because of the grouping of their ages). It can be expected that up to 10 percent more (about 376) will become inactive during the next decade; however, about the same percentage can be expected to re-enter the labor force within the next 20 years.

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*For a discussion of the effect of motherhood on the work of women, see Richard L. Simpson and Ida Harper Simpson, "Women and Bureaucracy in the Semi-professions," in Amitai Etzioni, ed., The Semi-professions, forthcoming.

From the point of view of health organizations, there is considerable waste in the education of nurses. The out-migration of nurses from the State and their irregular work histories point to a need to educate more nurses than there are positions to fill. This is less so for practical nurses than for registered nurses.

Intra-state migration of nurses is also high and has implications for planning. Individuals educated in one region of the State are almost as likely to work in another region as in the one where they received their education. The region in which a nurse is educated thus seems of relatively little importance in planning for future nursing needs. In other words, where a nurse works is related less to where she was educated than to a number of other things, the most important of which is whom she marries. The argument that each community or region of the State must educate its own nurses is not compelling and ignores crucial factors affecting employment of nurses. The aspiration of students might well be borne in mind in planning for nursing education; namely, quality education to qualify for employment anywhere.

Because of these reasons the State was used as the geographic unit for this report's analysis of educational resources for nursing. Location of a nursing program is important from the point of view of potential enrollment, especially of students from poorer families, but of minor importance from the perspective of the location of the future employment and the resources needed for educational programs.

II. PROJECTION OF DEMANDS FOR NURSING

The Duke Endowment Survey, conducted in 1962, revealed that there existed in North Carolina at that time 2,106 unfilled full-time registered nurse positions. Addition of this figure to the actual number of professional nurses in that year indicates that a ratio of about 280 nurses per 100,000 population would have prevailed in North Carolina in 1962. This ratio of 1962 should be improved to meet ever-increasing demand for health care in the State. The Surgeon General's Consultant Group on Nursing foresaw a need for 850,000 employed registered nurses in the United States by 1970. Comparison of that figure with projected population estimates for that year indicates a need for slightly more than 400 registered nurses in practice for each 100,000 residents by 1970. In 1962, several other states already had nurse-population ratios above 400. Since these states did not report an excess of registered nurses available, it must be concluded that their supply did not surpass their needs.

It appears, then, that the State's future planning should be directed toward the achievement of a nurse-population ratio of 400. Considering less favorable socio-economic factors in North Carolina than the national average and a lack of facilities in many areas of the State where nurses would be employed, it is reasonable to assume the need of a 400 ratio by 1975, not by 1970.

On the basis of the above assumption, therefore, it is estimated that approximately 17,800 active registered nurses are needed in North Carolina by 1970 and approximately 21,000 by 1975.

The need for practical nurses was estimated in relation to registered nurses. The ratio of practical nurses to registered nurses in North Carolina increased from 0.3 in 1954 to 0.4 in 1966. The ratio of about 0.5 seems to be the maximum. The Surgeon General's Consultant Group on Nursing set a feasible goal for 1970 to increase registered nurses to 680,000 and practical nurses to 350,000. Comparison of these two figures indicates a ratio of 0.51 practical nurse to one registered nurse.

If an increase of 0.01 in the licensed practical nurse-registered nurse ratio every year is assumed, then the ratio will lead to the ratio of 0.5 in 1975. On the basis of projected ratios of practical nurses to registered nurses, it is estimated that approximately 8,000 practical nurses are needed in North Carolina by 1970 and about 10,500 by 1975.

III. STUDENT POTENTIAL AND RECRUITMENT

The foregoing analyses of present nursing education in North Carolina suggest that the new supply of registered nurses would primarily be determined by the extent to which female high school graduates enter nursing education. An analysis of high school graduates indicates student potential.

The total number of North Carolina high school graduates increased from 45,291 in 1960 to 67,401 in 1965 (48.8 percent increase). It is expected that the number will reach 70,300 in 1970 (about five percent increase) and 73,800 in 1975. The large increase in high school graduates during the past five years was caused by the high birth rates following World War II. The future increase during the next five or ten years is expected to be much smaller than the past increase. This means that expansion in nursing school admissions will require more vigorous recruitment efforts than the past.

It would appear that a relatively smaller proportion of North Carolina female high school graduates are entering nursing education than the national average. According to a follow-up survey of the 1965 high school graduates in North Carolina by the State Department of Public Instruction, only 4.1 percent of the total female graduates entered various nursing education programs, including practical nurse training, as compared to the national average of 5.2 percent in 1962 excluding those who entered practical nurse programs.[11]

In order to project the amount of student potential for registered nursing education, the following assumptions were made. The Surgeon

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[11] Surgeon General's Consultant Group on Nursing, Toward Quality In Nursing: Needs and Goals (United States Department of Health, Education, and Welfare, Public Health Service Publication No. 992; Washington: United States Government Printing Office, 1963), p. 20.

General's Consultant Group on Nursing foresaw that with sufficient assistance for recruitment and for aid to students and schools better than six percent of the girls who graduate from high school by 1970 might be admitted.[12] It was assumed that in North Carolina the proportion of female high school graduates entering nursing education would continually improve from 4.1 percent in 1965 up to six percent in 1975. The projected student potential for nursing education is shown in Table XXV, below.

TABLE XXV

PROJECTION OF HIGH SCHOOL GRADUATES AND STUDENT POTENTIAL FOR NURSING EDUCATION IN NORTH CAROLINA, 1966-1975

	Projection of High School Graduates**		Projected Percentage of Females Entering Nursing Education	Student Potential
Year	Total	Female		
1965*	66,401	35,368	4.1	1,441
1966	67,000	35,510	4.5	1,600
1967	67,100	35,560	4.9	1,750
1968	66,300	35,140	5.2	1,830
1969	68,600	36,360	5.4	1,950
1970	70,300	37,260	5.5	2,050
1971	70,800	37,520	5.6	2,100
1972	72,200	38,270	5.7	2,150
1973	72,600	38,480	5.8	2,200
1974	73,000	38,390	5.9	2,300
1975	73,800	39,110	6.0	2,350

*Actual figure

**Source: High School Graduate Projection, Progress Report RS-48, North Carolina State University Agricultural Experiment Station, December 1965.

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[12] Ibid.

Table XXV shows that the number of female high school graduates will increase rather slowly and the increase in the student potential for nursing education will be primarily dependent on the improvement in the proportion of graduates entering nursing education.

IV. EDUCATIONAL POTENTIAL

Nursing schools in North Carolina reported in a 1966 survey conducted by the State Board of Higher Education that, on the average, they would expand their new enrollment capacity by 12 percent in the following year. Associate degree programs indicated a rapid expansion and baccalaureate programs a moderate expansion, while diploma programs indicated no further expansion.

Responding schools were asked to rank the most needed resources among faculty, applicant, academic facility, and clinical facility. To this particular question, 58 schools responded. The results are shown in Table XXVI, below.

TABLE XXVI

MOST NEEDED RESOURCES IN NORTH CAROLINA NURSING SCHOOLS

	No. of Schools Responding	Most needed resources mentioned*			
		Faculty	Applicant	Academic Facility	Clinical Facility
Practical nurse programs	25	4	4	2	18
Associate degree programs	5	2	2	1	-
Diploma programs	20	12	8	1	2
Baccalaureate programs	8	7	-	1	-
Total	58				

*Total does not necessarily equal the number responding because some schools gave first rank to more than one resource item.

The most frequently mentioned factor was faculty among diploma and baccalaureate programs, and clinical facilities among practical nurse programs. Academic facilities were least frequently mentioned among all types of nursing programs. No baccalaureate program mentioned applicants as the most needed resource for further expansion of the program.

V. GOALS FOR 1975

In view of the student potential and capacity of nursing education programs, it appears not feasible to meet the projected need until 1975. Taking into account the potential supply of students and the capacity of nursing schools, a feasible goal for 1975 was established. It was assumed that registered nursing programs would admit all the potential supply of students as projected in Table XXV, page 81, and all the educational resources would be utilized. It was further assumed that the present rate of attrition in registered nurse population and the present rate of dropout in registered nursing programs would continue. On the basis of these assumptions the number of registered nurses in practice in 1975 is expected to increase to about 18,200. This feasible goal is compared in Table XXVII, below, with the projected figures at the "present trend" and "to meet the needs."

TABLE XXVII

PROJECTED NUMBER OF NEW GRADUATES AND ACTIVE REGISTERED NURSES FOR 1975 AT THREE LEVELS: TREND, GOAL, NEED

	New Graduates, 1974	Registered Nurses, 1975	Nurse Population Ratio, 1975
Present trend	1,000	15,600	290
Feasible goal	1,400	18,200	340
To meet need	1,800	21,000	400

In order to attain the feasible goal, professional nursing schools in the State must produce about 1,400 graduates a year by 1975, more than an 80 percent increase over the present level of supply (see Figure 5, page 86).

A feasible goal in the supply of practical nurses was established in accordance with the goal for registered nurse supply. This goal is to increase the number of practical nurses in practice from 5,105 in 1966 to about 9,000 by 1975. The present trend of increase in the supply of practical nurses seems to be sufficient for the attainment of the goal proposed until 1970. On the other hand, action should be taken immediately in order to attain the goal for registered nurse supply.

As mentioned earlier, if the rate of dropouts could be reduced in all types of nursing programs and the potential supply of students be attracted to nursing education, the goal proposed above would be more than attained.

The proposed goal for new registered nurse graduates should be broken down into specific goals for various levels of academic preparation. The following specific goals are suggested:

Basic Programs	Actual Graduates 1965-66	Goal for 1975-76
Baccalaureate	168	400
Diploma	540	500
Associate Degree	32	500
Total	740	1,400
Post-Registered Nurse Baccalaureate	28*	120
Master's Degree	23	100

*Estimated figure.

It has been assumed that the graduates of diploma programs would remain constant. A rapid growth has been assumed in the number of graduates of associate degree programs and a moderate growth from baccalaureate degree programs. The goal for master's degree programs was based on questionnaire responses from the University of North Carolina at Chapel Hill and Duke University. About 0.7 percent[13] of the projected number of professional nurses in 1975 was assumed as a goal for post-registered nurse baccalaureate graduates.

The most urgent need seems to be an increase in the number of nurses with academic preparation for teaching, supervision, and other leadership positions.

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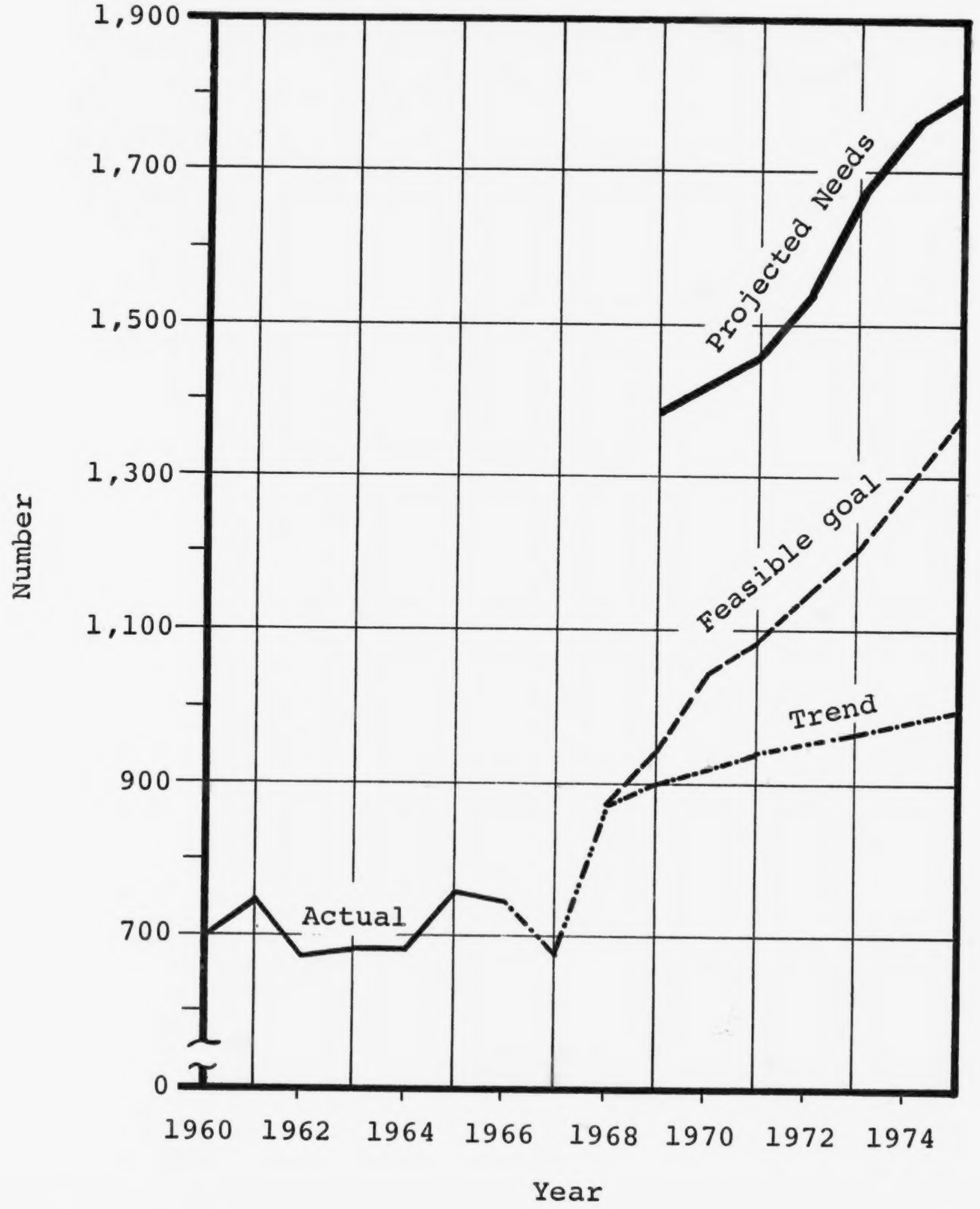
[13] Surgeon General's Consultant Group on Nursing, Toward Quality In Nursing: Needs and Goals (United States Department of Health, Education, and Welfare, Public Health Service Publication No. 992; Washington: United States Government Printing Office, 1963), p. 22.

Figure 5. NUMBER OF GRADUATES FROM BASIC PROFESSIONAL NURSING PROGRAMS IN NORTH CAROLINA, 1960-66, WITH NEED AND GOAL TO 1975



CHAPTER VII

RECOMMENDATIONS FOR THE FUTURE DEVELOPMENT OF NURSING EDUCATION IN NORTH CAROLINA

This chapter deals with the future development of nursing education in North Carolina. It consists of four parts: (1) assumptions, (2) proposed courses of action, (3) recommended minimum standards, and (4) the need for continuing study. Assumptions as to how nursing will meet the demands of the future are identified and discussed because it is upon these assumptions that the courses of action and minimum standards for the future development of nursing education are based.

I. ASSUMPTIONS

1. TOTAL ATTRACTIVENESS OF NURSE WORKING SITUATION WILL IMPROVE. Nursing careers will be made more attractive, and one by-product will be that more and better qualified students will be attracted to nursing. Young people of today are more sophisticated about career choices than were most of their elders. They have a better opportunity to examine the rewards and satisfactions offered by various professions and occupations. The number of careers with which nursing must compete has increased tremendously. To be competitive, the rewards for nurses must be in line with those offered by comparable professions and occupations.

Working conditions of nurses must be improved. One source of dissatisfaction with nursing careers is assignment to work at a level other than for which the nurse has been prepared. The employer's expectations of nursing personnel must be redefined. The rewards must be commensurate with preparation, with responsibility, and with the working conditions.

2. NURSING EDUCATION PROGRAMS WILL IMPROVE. Efforts will be directed more to qualitative improvement of existing nursing education. A decrease in attrition of nursing students and in the failure rate on licensing examinations could approximate what is considered the necessary number of new nurses required to attain the suggested goal for 1975. Even if there were no shortage of nurses, sound practice dictates that a significant effort be made to lower the attrition and failure rates in existing nursing education programs.

3. RECRUITMENT OF NURSE STUDENTS WILL INCREASE. More qualified students will be recruited for nursing education. At the present time relatively fewer female high school graduates are entering nursing education in North Carolina than the national average. Efforts will be made to recruit at least an average of five percent of female high school graduates by 1970 and move toward a goal of six percent by 1975 (which is the national goal for 1970). More males will be recruited for nursing education.

4. NURSING EDUCATION OUTPUT WILL INCREASE. Expansion of nursing education output will be achieved in two ways: quantitative expansion of existing programs and quality improvement. In light of foregoing analyses, major efforts will be directed more to quality improvement of nursing education.

5. RETURN OF INACTIVE NURSES TO PROFESSION WILL INCREASE. In 1966 there were about 3,000 inactive registered nurses and about 1,000 inactive

practical nurses in North Carolina. These figures represent only those who maintain their licenses. It is believed that there were about the same number of inactive nurses who did not maintain their licenses. Many of them are married women with young children. More of these inactive nurses will be attracted back to practice through retraining opportunities and arrangements for more convenient working hours.

6. NURSING RESPONSIBILITIES WILL CHANGE. More service will be obtained from available nurses by changes in existing nurse responsibilities. The unique knowledge and skills of nurses will be utilized wisely and effectively in most essential areas; nurses will be relieved of unnecessary responsibilities which can be assumed by lesser trained personnel.

II. RECOMMENDED COURSES OF ACTION

1. INTENSIFY STUDENT RECRUITMENT. Vigorous recruiting programs must be developed further in order to attract more and better-qualified students. Such programs should include increases in scholarship and loan funds, and vigorous and efficient dissemination of information about nursing careers. Cooperative efforts should be made on the part of the nursing profession, high school guidance counselors, nursing school faculties, and public information media.

2. EXPAND ENROLLMENT IN ADEQUATE PROGRAMS. The finding that the ratio of students to faculty members is unrelated to educational preparation of the students suggests that the cheapest way in time, money and effort to increase educational opportunities for nursing is through expansion of existing programs having adequate hospital resources and faculty. There are several of these in the State. Programs with inadequate resources, however,

should not be expanded. Since a high percentage of students from these programs do not pass the State board examination, the expansion of these programs would not add significantly to the existing supply of nurses, and would incur considerable additional waste. The ratio of students to faculty is limited, however, by the specialty being taught, ease of communication between student and instructor, and the patient load for which the instructor is responsible.

3. UPGRADE INADEQUATE PROGRAMS. This may be done through finding more adequate hospital facilities and more qualified faculty, and also by limiting enrollment in poor programs so that their available resources may be used more effectively. It is recommended that consultative services and assistance readily available from the North Carolina Board of Nursing and other agencies and institutions be fully utilized. In the next decade it is assumed that there will be considerable upgrading in the levels of responsibility of nurses and in the minimal level of preparation required for licensing. Unless poor programs improve their resources it can be expected that the percentages of their graduates failing the State board examinations will increase.

4. EXPAND CONTINUING EDUCATION AND REFRESHER COURSE PROGRAMS. It is essential that continuing education programs receive State support for upgrading the knowledge and skills of active nurses. In addition, refresher courses must be expanded to attract inactive nurses back into the profession as well as to upgrade the knowledge and skills of practicing nurses. Workshops, short-courses, and seminars best serve this purpose.

5. PHASE OUT PROGRAMS WITH 50 PERCENT OF GRADUATES FAILING OVER A PERIOD OF THREE YEARS THE LICENSING EXAMINATION FOR NURSING. Three years should give sufficient time for improvement in instruction of students, and if improvement is not indicated the program should be judged incapable of meeting its educational function and therefore closed. Nursing programs exist to prepare students for nursing; if 50 percent or more of their graduates lack qualifications for minimal preparation in nursing, for whatever reason the money and effort spent on such a program is wasted. Sentiment should not cloud this fact.

6. EXPAND GRADUATE NURSING EDUCATION PROGRAMS. One of the major obstacles to expansion and improvement of basic education programs is the lack of a sufficient number of qualified faculties. The number of professional nurses with master's degrees must be sharply increased if faculty positions in nursing schools and leadership positions in hospitals and health organizations are to be filled with qualified persons. Nurses capable of graduate study should be encouraged to enter graduate programs. Master's degree programs should be undertaken only in institutions having adequate baccalaureate programs. At the present time, only a few of the baccalaureate programs in the State have adequate resources for postbaccalaureate education.

III. RECOMMENDED MINIMUM STANDARDS

1. HOSPITAL CLINICAL RESOURCES. The findings of this report clearly and decisively indicate that how well a program prepares its students is determined to a great extent by its hospital resources. Therefore, it is strongly recommended that the following standards be met by nursing education

programs. A practical nursing program should use a hospital with at least a minimum daily average census of 60 patients that has at least an operating room, a delivery room, a clinical laboratory, and diagnostic X-ray. A diploma or associate degree program should use a hospital with an average daily census of 150 or above and with seven or more facilities. Baccalaureate programs should use hospitals with an average daily census of 300 or above and having 12 or more facilities. Average census rather than bed capacity should be used to measure hospital size; the censuses of small hospitals tend to be far below bed capacities. Thus, only census of patients can give an indication of a patient pool for clinical resources. These guidelines are suggested to maximize exposure to a variety of patients and associated nursing situations.

2. ENROLLMENT IN A NURSING PROGRAM SHOULD INSURE A RATIO OF AT LEAST FIVE PATIENTS TO EACH STUDENT RECEIVING CLINICAL EXPERIENCE IN A GIVEN AREA OR DEPARTMENT OF THE TRAINING HOSPITAL AT A GIVEN TIME. This guideline goes further than the one on census size and number of facilities; it aims to insure selectivity of clinical assignments appropriate to educational objectives by guaranteeing a pool of patients in each clinical area. Any deviation from the standard on census size and number of facilities should be countered by strict enforcement of this patient-student ratio. This guideline should not be interpreted as a strict ratio of patients to students. It is the ratio of patients in a given clinical area to the number of students studying in that area at a given time. If the faculty of a nursing school is sufficiently large to

vary the time of clinical experiences in a given clinical area, the number of students using the area during these scheduled times might approach the number of patients.

3. ONLY UNDER UNUSUAL CIRCUMSTANCES SHOULD ONE HOSPITAL BE USED SIMULTANEOUSLY BY MORE THAN ONE PROGRAM FOR REGISTERED NURSES. Basing clinical experiences of more than one nursing program for registered nurses in the same hospital may limit resources for clinical experiences. Even when resources are ample, flexibility of curriculum planning is reduced, and the hospital staff has difficulty distinguishing and knowing what to expect of students from different programs.

Hospitals with an average census of at least 200 might be used concurrently by programs for registered and practical nurses. These programs train for different levels of responsibility and would seemingly confuse hospital staff less than two different programs training for the same level of responsibility. When programs both for practical and registered nurses exist in the same hospital, priority of resources should be established for the registered nurse program.

4. NO PROGRAM SHOULD BE ESTABLISHED IN THE ABSENCE OF THE AVAILABILITY OF A PRIMARY HOSPITAL MEETING THE CRITERIA ON SIZE AND FACILITIES. Two small hospitals do not provide the variety of patients found in a large hospital. A primary hospital enables clinical experiences to be readily integrated with formal instruction. Faculty are not faced with the continual problem of traveling "hither and yon" to ascertain what resources are available for demonstration and practice in applying nursing principles. A primary hospital enables the faculty to spend more time with students and with evaluation of nursing situations for educational purposes. Moreover, the established relationship of a school to its hospital results

in an identification of the one with the other to promote a helpful educational climate. This intimate connection furthers the students' identification with nursing and their motivation to become nurses.

5. THE EDUCATIONAL ATTAINMENT OF A FACULTY MEMBER SHOULD BE AT LEAST ONE LEVEL MORE ADVANCED THAN THE LEVEL OF NURSING WHICH SHE TEACHES, BUT NOT LESS THAN A BACCALAUREATE DEGREE. Each member of the instructional staff of a diploma or associate degree program should have at least a baccalaureate education, and of baccalaureate programs at least a master's degree in nursing. Assistants to the instructional staff should have received education beyond the level at which they instruct, and preferably at the same level as the instructional staff.

IV. NEED FOR CONTINUING STUDY

Successful planning must be accompanied by continuing evaluation and adjustment. To meet changing needs for nursing services, there should be an on-going reappraisal of nursing education. Subsequent evaluation studies will need more detailed and new information. The Joint Committee on Nursing Education of the State Board of Higher Education and the State Board of Education should make an effort to monitor all available information concerning nursing and related fields, and gather new information as needed.

APPENDIX A

GENERAL INFORMATION PERTAINING TO LICENSURE IN NORTH CAROLINA FOR THE PRACTICE OF NURSING

GENERAL INFORMATION PERTAINING TO LICENSURE IN NORTH CAROLINA FOR THE PRACTICE OF NURSING*

by
Mary McRee, Executive Director,
North Carolina Board of Nursing

WHY IS LICENSURE NECESSARY?

The protection of the public is the basic purpose of all licensing legislation. Each state controls the practice of nursing by law. In North Carolina a current license issued by the North Carolina Board of Nursing is required for the legal practice of nursing in this State.

Individuals desiring to practice nursing must meet the qualifications and standards established through state law. Provision is made to revoke or suspend the license of anyone who fails to function in accordance with the law.

WHAT DOES THE NURSE GAIN FROM LICENSURE?

1. She may legally practice nursing in the state in which she is currently licensed.
2. She may apply for a license by endorsement in a second state or in a foreign country.
3. The registered nurse is eligible for membership in the state nurses association, the American Nurses' Association and the International Council of Nurses.
4. The practical nurse is eligible for membership in the National Federation of Licensed Practical Nurses.

WHAT IS THE LICENSING AUTHORITY IN EACH STATE?

The laws of each state provide for the appointment of a legal agency to implement the Nursing Practice Act. In North Carolina this agency is the North Carolina Board of Nursing.

HOW DOES THE BOARD OF NURSING FUNCTION?

The major responsibilities of the North Carolina Board of Nursing is enforcement of the Nursing Practice Act. In carrying out this responsibility, the Board's functions include:

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*Further details may be obtained from the North Carolina Board of Nursing, P. O. Box 2129, Raleigh, North Carolina. Portions of this statement have been adapted from licensure information issued by the American Nurses' Association.

1. Issuance of license to practice nursing to those persons who qualify according to requirements of the law and regulations of the Board.

    a. Arrangement for the periodic renewal of licenses.

    b. Suspension or revocation of licenses for cause.

    c. Action on applications for licensure from candidates from other states and other countries.

    d. Development of licensing examinations to test the fitness of candidates in meeting minimum standards of safety to practice.

    e. Administration of the examination and, on the basis of candidate achievement, determination of the granting or withholding of a license.

    f. Obtaining reports from employing agencies about staff census.

2. State accreditation of educational units in nursing which prepare persons for licensure through the licensing examination.

    a. Establishment of minimum standards for programs in basic nursing--both for registered nurse and practical nurse.

    b. Visitation of schools and study of curriculum, faculty and facilities as a prerequisite to the granting of official accreditation.

In addition, the Board accepts responsibility for assisting educational units and nursing services in continued improvement of programs and services and for publishing--periodically--information pertaining to licensing and educational statistics.

HOW IS THE EXAMINATION PREPARED AND ADMINISTERED?

The examinations leading to licensing as LPN and RN are prepared according to policies established by the Council of State Boards of Nursing, composed of one representative from each board in the United States. These policies are in keeping with all state laws regulating nursing. Each state participates in the development of examinations through the Council's committees on blueprints for the examination and selection of item writers who construct the test items.

The Committee on Blueprint for Licensing Examinations is composed of six persons employed by state boards from different geographical regions of the United States. This committee develops a core test plan for each series of professional and practical nursing examinations.

Subject matter experts (item writers) are recommended by all state boards on an alternating basis to prepare suitable items for the tests. Each item writer spends one week working with the NLN Test Construction staff to formulate questions in the area of her specialty.

Each paper includes 100 to 120 multiple choice questions designed not only to test specific knowledge but also the ability to apply that knowledge in making judgments concerning the care of the patient.

The Blueprint Committee reviews and compiles the work of the item writers, and a draft of the proposed questions is sent to each board of nursing. Under strict security regulations, the board members study the questions and indicate the items they believe should be retained, revised or deleted. Constructive criticism of the entire document is given.

Following a final review by the Blueprint Committee, the examination papers are printed in final form by the National League for Nursing. They are then distributed to the participating boards of nursing under signed contracts which provide for security regulations and the financial agreement.

The examination in practical nursing is developed in two parts, according to a similar plan. Knowledge and judgment necessary to pass this examination are in keeping with the minimum standards for practical nursing. Two days are allowed for writing the registered nurse examination and one day for the examination in practical nursing.

The candidates' answer sheets are returned to the NLN for mechanical scoring, and statistical reports are sent to each board of nursing. The board studies the results and determines the minimum passing score.

Responsibility for determining the passing score and deciding whether or not the candidate may be safely granted licensure is thus carried by the individual board of nursing. Candidates who qualify are granted a license to practice. Others are advised about repeating the tests in which they have failed.

The following is a sample of the type of test question which might be used in the examination leading to license as registered nurse:

> If a patient with diabetes mellitus becomes anxious and perspires and complains of weakness and hunger, which action is it important for the nurse to take first?
>
> 1. Put him to bed and apply extra warmth.
> 2. Obtain a urine specimen.
> 3. Take his blood pressure, pulse and respiration.
> 4. Give him a beverage containing sugar.

Candidates for license to practice nursing apply to the board of nursing to write the examination. If the application is approved by the board, the applicant is eligible to take the licensing examination.

HOW IS A LICENSE OBTAINED IN A SECOND STATE?

A nurse licensed in one state who wishes to practice in a second state makes application to the board of nursing in the second state. The latter board will review the information submitted and determine: if a license may be granted by endorsement without examination, if examination is indicated, or if additional educational experiences are needed to meet requirements of the law. The board must be assured that the preparation of the applicant is equivalent to that required of its own graduates.

HOW IS A LICENSE OBTAINED BY A NURSE FROM ANOTHER COUNTRY?

A nurse licensed in another country makes application to the board of nursing in the state in which she wishes to work. In North Carolina she must supply evidence of: completion of a program in nursing accredited by the official agency in her country; graduation from an accredited high school or equivalent as evidenced by G.E.D. test; experiences in program as required by the law and passing score on the licensing examination. The board evaluates the credentials and determines whether its minimum requirements are met. Citizenship or declaration of intention is a prerequisite for licensure in several states but not in North Carolina.

GENERAL INFORMATION

1. All candidates for license as registered nurses must provide evidence of graduation from an accredited high school or equivalent. Secondary educational requirements for license as a practical nurse is completion of ninth grade or equivalent.

2. Licensing examinations are given in all states at least once a year. Each board sets its own deadline for acceptance of applications.

3. Dates of examinations are available by contacting the board of nursing in each state.

4. Examination centers are determined by the board.

5. Fees for the licensing examination vary from state to state. North Carolina's fees are established in the Nursing Practice Act.

6. Fees are payable in advance.

7. Some state laws have requirements regarding citizenship and minimum age. North Carolina has neither of these.

APPENDIX B

TABLES

TABLE XXVIII

STATISTICAL DATA CONCERNING HOSPITAL, ASSOCIATE DEGREE, AND BACCALAUREATE NURSING PROGRAMS IN NORTH CAROLINA, 1966

	Students in School				Admissions				
Hospital Schools	1st Yr.	2nd Yr.	3rd Yr.	Total	Total	N.C. Resident	Total Accepted	Total Applied	Total Graduated
Cabarrus Memorial (Concord)	53	25	27	105	66	62	66	190	29
Charlotte Memorial* (Charlotte)	-	55	55	110	-	-	-	-	47
Community* (Wilmington)	-	-	6	6	-	-	-	-	9
Davis (Statesville)	16	18	11	45	25	25	36	59	12
Forsyth Memorial (Winston-Salem)	35	23	22	80	44	37	49	147	24
Gaston Memorial (Gastonia)	22	14	12	48	25	24	33	82	16
Hamlet (Hamlet)	29	27	16	72	39	20	42	100	18
High Point Mem. (High Point)	14	12	12	38	20	20	32	120	20
Highsmith-Rainey (Fayetteville)	16	6	9	31	20	19	20	42	11
Lenoir Memorial (Kinston)	17	11	9	21	21	20	30	73	6
Lincoln (Durham)	19	11	8	38	22	18	25	291	8
Lowrance (Mooresville)	16	6	7	29	18	17	20	36	8
Martin Memorial (Mount Airy)	18	19	10	47	25	15	27	65	8
Memorial Mission (Asheville)	16	27	26	69	23	20	23	45	24
Mercy (Charlotte)	46	29	19	94	51	38	70	83	26
Mountain (Fletcher)	22	15	22	59	23	7	27	38	21
N. C. Baptist (Winston-Salem)	54	54	50	158	69	54	95	300	38
Park View (Rocky Mount)	19	7	14	40	21	21	22	58	13
Presbyterian (Charlotte)	71	76	57	204	77	67	86	212	58
Rex (Raleigh)	26	26	19	71	32	30	53	103	22
Kate B. Reynolds (Winston-Salem)	16	11	16	43	17	14	18	80	16
Rowan Memorial (Salisbury)	24	15	22	61	29	29	37	76	16
Southeastern Gen.* (Lumberton)	-	21	25	46	-	-	-	-	14

Table XXVIII continued

	Students in School					Admissions				
Hospital Schools	1st yr.	2nd yr.	3rd yr.	4th yr.	Total	Total	N.C. Resident	Total Accepted	Total Applied	Total Graduated
James Walker Mem.* (Wilmington)	-	-	15	-	15	-	-	-	-	18
Watts (Durham)	65	43	42	-	150	71	69	104	264	46
Wilson School (Wilson)	34	26	17	-	77	42	39	43	208	12
A. D. Programs										
Central Piedmont (Charlotte)	46	-	-	-	46	81	69	130	456	-
Chowan College (Murfreesboro)	30	7	-	-	37	39	22	39	52	-
Gardner-Webb Col. (Boiling Springs)	30	45	-	-	75	43	37	43	54	-
Rockingham Com. (Wentworth)	-	-	-	-	-	-	-	-	-	-
Sandhills Com.** (Southern Pines)	-	-	-	-	-	-	-	-	-	-
Southeastern Com.** (Whiteville)	-	-	-	-	-	-	-	-	-	-
UNC at Greensboro* (Greensboro)	40	31	-	-	71	68	60	68	118	32
Western Piedmont** (Morganton)	-	-	-	-	-	-	-	-	-	-
Wilmington Col. (Wilmington)	12	-	-	-	12	12	-	-	-	-
Baccalaureate Programs										
Duke Univ. (Durham)	80	68	60	52	260	85	10	124	278	55
East Carolina Col. (Greenville)	134	45	29	21	229	172	152	224	unknown	13
Lenoir-Rhyne Col. (Hickory)	27	9	17	7	60	28	27	40	65	15
NC A&T State Univ. (Greensboro)	47	37	12	20	116	42	36	55	608	20
N. C. College++ (Durham)	-	9	6	15	30	-	-	-	-	-
UNC at Chapel Hill (Chapel Hill)	70	56	48	37	227+	73	61	73+	466	54
UNC at Charlotte (Charlotte)	16	6	-	-	22	22	22	22	22	-
Winston-Salem State (Winston-Salem)	24	23	14	17	78	32	27	33	121	11

* Programs in the process of closing
** New programs
+ Includes 16 registered nurses
++ Admits registered nurses only

Source: North Carolina Board of Nursing (figures taken from its annual report; April 1, 1965-March 31, 1966).

TABLE XXIX

SELECTED DATA ON STUDENTS IN NURSING EDUCATION PROGRAMS IN NORTH CAROLINA, 1960-1966

Year	Total	Practical Nurse Programs		Associate Degree Programs		Diploma Programs		Baccalaureate Programs	
		No.	%	No.	%	No.	%	No.	%
Student Enrollment									
1966*	3,693	718	19.4	196	5.3	1,803	48.8	976	26.5
1965*	3,344	602	18.0	65	1.9	1,841	55.0	836	25.1
1964*	3,266	599	18.3	57	1.8	1,817	55.6	793	24.3
1963*	3,130	486	15.5	46	1.5	1,867	59.6	731	23.4
1962	3,218	465	14.4	49	1.5	1,927	60.0	777	24.1
1961	3,242	476	14.7	45	1.4	1,972	60.8	749	23.1
1960	3,060	376	12.3	48	1.6	1,966	64.2	670	21.9
Students Admitted									
1966*	2,328	871	37.4	218	9.4	770	33.1	469	20.1
1965*	2,028	716	35.3	42	2.1	887	43.7	383	18.9
1964*	1,847	680**	36.8	36	2.0	820	44.4	311	16.8
1963*	1,772	645	36.4	30	1.7	840	47.4	257	14.5
1962	1,671	537	32.1	31	1.9	802	48.0	301	18.0
1961	1,831	582	31.8	29	1.5	911	49.8	309	16.9
1960	1,643	480	29.2	32	2.0	907	55.2	224	13.6
Students Graduated									
1966*	1,232	492	40.0	32	2.6	540	43.8	168	13.6
1965*	1,215	464	38.2	21	1.7	553	45.5	177	14.6
1964*	1,145	460**	40.2	21	1.8	518	45.2	146	12.8
1963*	1,139	454	39.8	17	1.6	556	48.8	112	9.8
1962	1,095	416	38.0	17	1.6	541	49.4	121	11.0
1961	1,075	334	31.1	16	1.5	571	53.1	154	14.3
1960	1,019	323	31.7	16	1.6	551	54.1	129	12.6

Source: North Carolina Board of Nursing
* Taken from its annual report for Year Ending March 31.
Figures for other years are yearly statistics as of December 31.
** Estimate figure.

TABLE XXX

CIVILIAN POPULATION AND REGISTERED AND PRACTICAL NURSES IN PRACTICE IN NORTH CAROLINA BY COUNTY, 1965

Counties	Civilian* Population July 1, 1965	Active Registered Nurses**		Active Practical Nurses**	
		Number	Ratio Per 100,000 Population	Number	Ratio Per 100,000 Population
Alamance	92,436	187	202	143	155
Alexander	16,267	14	86	7	43
Alleghany	7,532	9	119	7	93
Anson	23,842	37	155	15	63
Ashe	19,198	19	99	2	10
Avery	11,620	22	189	76	654
Beaufort	36,087	63	174	89	247
Bertie	23,202	18	78	12	52
Bladen	26,694	26	97	10	37
Brunswick	20,688	13	63	12	58
Buncombe	135,209	556	411	362	268
Burke	57,048	228	400	50	88
Cabarrus	70,662	244	345	45	64
Caldwell	53,478	57	107	71	133
Camden	5,413	2	37	6	111
Carteret	29,937	66	220	18	60
Caswell	19,725	4	20	6	30
Catawba	80,845	146	180	62	77
Chatham	27,518	48	174	21	76
Cherokee	15,761	16	102	15	95
Chowan	11,410	17	149	15	131
Clay	5,169	2	39	-	-
Cleveland	69,080	152	220	120	174
Columbus	48,286	66	137	8	16
Craven	54,558	100	183	47	86
Cumberland	140,595	360	256	142	101
Currituck	6,816	2	29	7	103
Dare	5,849	2	34	3	51
Davidson	89,516	128	143	71	79
Davie	17,725	25	141	27	152
Duplin	38,081	56	147	39	102
Durham	119,548	811	678	727	608
Edgecombe	54,976	58	106	47	85
Forsyth	210,407	892	424	271	129
Franklin	27,137	27	99	20	74
Gaston	134,993	215	159	74	55
Gates	9,293	3	32	2	22
Graham	6,186	4	65	-	-
Granville	34,285	83	242	76	222
Greene	16,484	4	24	1	6

Table XXX continued

		Active Registered Nurses**		Active Practical Nurses**	
Counties	Civilian* Population July 1, 1965	Number	Ratio Per 100,000 Population	Number	Ratio Per 100,000 Population
Guilford	267,290	920	344	272	102
Halifax	59,761	113	189	50	84
Harnett	48,812	59	121	45	92
Haywood	40,761	76	186	73	179
Henderson	38,862	118	304	69	178
Hertford	23,495	46	196	25	106
Hoke	16,766	35	209	35	209
Hyde	5,462	2	37	3	55
Iredell	67,711	255	377	36	53
Jackson	17,468	27	154	21	120
Johnston	61,095	95	155	50	82
Jones	10,247	3	29	-	-
Lee	28,920	84	290	59	204
Lenoir	58,520	138	236	70	120
Lincoln	30,028	36	120	13	43
McDowell	27,261	24	88	27	99
Macon	14,438	14	97	2	14
Madison	15,759	15	95	14	89
Martin	25,702	6	23	2	8
Mecklenburg	316,720	1,372	433	424	134
Mitchell	13,088	22	168	17	130
Montgomery	18,859	17	90	3	16
Moore	38,333	111	290	71	185
Nash	63,037	189	300	41	65
New Hanover	75,523	340	450	85	112
Northampton	25,522	9	35	5	20
Onslow	62,636	87	139	28	45
Orange	48,055	375	780	154	320
Pamlico	9,512	6	63	1	10
Pasquotank	26,532	51	192	113	426
Pender	17,441	23	132	11	63
Perquimans	8,706	2	23	11	126
Person	27,699	41	148	25	90
Pitt	71,051	144	203	76	107
Polk	11,219	27	241	16	143
Randolph	68,898	81	118	56	81
Richmond	39,275	85	216	32	81
Robeson	89,698	150	167	42	47
Rockingham	71,249	141	198	42	59
Rowan	85,487	224	262	66	77

Table XXX continued

Counties	Civilian* Population July 1, 1965	Active Registered Nurses**		Active Practical Nurses**	
		Number	Ratio Per 100,000 Population	Number	Ratio Per 100,000 Population
Rutherford	44,528	83	186	20	45
Sampson	47,888	59	123	15	31
Scotland	25,124	70	279	57	227
Stanly	42,091	88	209	35	83
Stokes	22,991	16	70	11	48
Surry	49,866	132	265	26	52
Swain	8,229	19	231	10	122
Transylvania	17,486	36	206	12	69
Tyrrell	4,221	4	95	-	-
Union	48,062	66	137	57	118
Vance	32,645	53	162	49	150
Wake	194,947	761	390	290	149
Warren	17,769	12	68	9	51
Washington	13,910	16	115	8	58
Watauga	17,785	41	230	23	129
Wayne	84,373	213	252	235	279
Wilkes	47,075	64	136	7	15
Wilson	58,610	201	343	84	143
Yadkin	23,685	34	144	25	106
Yancey	13,015	8	61	10	77

Source: *_Estimates of the Population of North Carolina Counties as of July 1, 1965_, Progress Report RS-49, North Carolina State University Agricultural Experiment Station, March, 1966.

**North Carolina Board of Nursing.

TABLE XXXI

NUMBER AND PERCENT OF THE 1965 FEMALE HIGH SCHOOL GRADUATES ENTERED NURSING PROGRAMS BY COUNTY, IN NORTH CAROLINA

Counties	Total Female Graduates	No. Entered Baccalaureate Nursing Programs	No. Entered Other Nursing Programs	Total No. Entered Nursing Programs	Percent Entered Nursing Programs
Alamance	691	4	27	31	4.5
Alexander	136	1	3	4	2.9
Alleghany	64	1	5	6	9.4
Anson	242	4	2	6	2.5
Ashe	170	3	2	5	2.9
Avery	91	2	2	4	4.4
Beaufort	302	3	18	21	7.0
Bertie	185	2	16	18	9.7
Bladen	259	7	4	11	4.2
Brunswick	178	1	2	3	1.7
Buncombe	1,054	14	38	52	4.9
Burke	414	7	9	16	3.9
Cabarrus	593	5	24	29	4.9
Caldwell	367	2	9	11	3.0
Camden	33	-	-	-	0.0
Carteret	221	1	7	8	3.6
Caswell	147	1	1	2	1.4
Catawba	680	5	15	20	2.9
Chatham	254	3	7	10	3.9
Cherokee	142	4	3	7	4.9
Chowan	87	-	1	1	1.1
Clay	38	-	1	1	2.6
Cleveland	553	5	19	24	4.3
Columbus	444	1	13	14	3.2
Craven	342	9	17	26	7.6
Cumberland	922	15	20	35	3.8
Currituck	40	2	2	4	10.0
Dare	26	-	1	1	3.8
Davidson	665	2	23	25	3.8
Davie	124	2	8	10	8.1
Duplin	364	2	4	6	1.6
Durham	836	10	36	46	5.5
Edgecombe	324	1	6	7	2.2
Forsyth	1,157	23	37	60	5.2
Franklin	239	6	4	10	4.2
Gaston	919	6	21	27	2.9
Gates	70	1	-	1	1.4
Graham	50	1	-	1	2.0
Granville	251	4	6	10	4.0
Greene	141	-	2	2	1.4

Table XXXI continued

Counties	Graduates	No. Entered Baccalaureate Nursing Programs	No. Entered Other Nursing Programs	Total No. Entered Nursing Programs	Percent Entered Nursing Programs
Guilford	1,779	18	53	71	4.0
Halifax	461	5	10	15	3.2
Harnett	447	7	3	10	2.2
Haywood	342	3	15	18	5.3
Henderson	284	8	7	15	5.3
Hertford	187	3	6	9	4.8
Hoke	114	2	3	5	4.4
Hyde	52	-	3	3	5.8
Iredell	531	3	25	28	5.3
Jackson	137	1	-	1	0.7
Johnston	594	2	18	20	3.4
Jones	114	2	4	6	5.3
Lee	222	2	6	8	3.6
Lenoir	490	8	18	26	5.3
Lincoln	248	4	5	9	3.6
McDowell	241	2	6	8	3.3
Macon	129	1	2	3	2.3
Madison	93	2	-	2	2.2
Martin	219	5	3	8	3.6
Mecklenburg	2,144	18	64	82	3.8
Mitchell	121	1	8	9	7.4
Montgomery	152	3	-	3	2.0
Moore	274	6	7	13	4.7
Nash	643	10	19	29	4.5
New Hanover	527	6	16	22	4.2
Northampton	230	2	9	11	4.8
Onslow	346	10	4	14	4.0
Orange	260	4	6	10	3.8
Pamlico	84	-	2	2	2.4
Pasquotank	188	7	7	14	7.4
Pender	149	5	-	5	3.4
Perquimans	86	-	2	2	2.3
Person	205	-	7	7	3.4
Pitt	502	10	11	21	4.2
Polk	99	-	3	3	3.0
Randolph	471	5	11	16	3.4
Richmond	312	1	14	15	4.8
Robeson	706	8	11	19	2.7
Rockingham	528	4	15	19	3.6
Rowan	638	13	15	28	4.4

Table XXXI continued

Counties	Total Female Graduates	No. Entered Baccalaureate Nursing Programs	No. Entered Other Nursing Programs	Total No. Entered Nursing Programs	Percent Entered Nursing Programs
Rutherford	340	11	10	21	6.2
Sampson	411	5	4	9	2.2
Scotland	209	2	9	11	5.3
Stanly	370	-	11	11	3.0
Stokes	154	-	1	1	0.6
Surry	427	6	17	23	5.4
Swain	78	-	3	3	3.8
Transylvania	147	6	-	6	4.1
Tyrrell	44	-	2	2	4.5
Union	366	-	15	15	4.1
Vance	229	-	7	7	3.0
Wake	1,199	16	28	44	3.7
Warren	192	2	2	4	2.1
Washington	104	1	2	3	2.9
Watauga	126	3	2	5	4.0
Wayne	660	17	25	42	6.4
Wilkes	396	3	21	24	6.1
Wilson	444	4	9	13	2.9
Yadkin	191	6	4	10	5.2
Yancey	117	2	1	3	2.6
Total	35,368	435	1,006	1,441	4.1

Source: Follow-up Survey of High School Graduates, 1965
North Carolina Department of Public Instruction

TABLE XXXII

IN-STATE STUDENTS IN NURSING PROGRAM IN NORTH CAROLINA BY COUNTY, AS OF MARCH 31, 1966

County of Home Residence	Baccalaureate Programs	Associate Degree Programs	Diploma Programs	Sub-Total	Practical Nurse Programs	Grand Total
Alamance	10	3	36	49	14	63
Alexander	-	-	8	8	0	8
Alleghany	-	-	2	2	1	3
Anson	2	1	6	9	3	12
Ashe	1	-	2	3	1	4
Avery	-	-	3	3	-	3
Beaufort	3	2	20	25	8	33
Bertie	5	1	6	12	3	15
Bladen	-	-	6	6	-	6
Brunswick	2	-	2	4	-	4
Buncombe	13	2	35	50	24	74
Burke	8	4	18	30	2	32
Cabarrus	8	-	33	41	10	51
Caldwell	4	1	8	13	9	22
Camden	-	-	-	-	-	-
Carteret	1	-	10	11	13	24
Caswell	6	1	2	9	-	9
Catawba	7	4	24	35	2	37
Chatham	4	1	10	15	6	21
Cherokee	-	-	1	1	-	1
Chowan	2	1	-	3	1	4
Clay	-	-	1	1	1	2
Cleveland	2	7	24	33	-	33
Columbus	3	2	14	19	1	20
Craven	9	-	19	28	13	41
Cumberland	18	-	26	44	7	51
Currituck	-	-	1	1	-	1
Dare	-	-	-	-	-	-
Davidson	6	3	38	47	10	57
Davie	3	1	12	16	7	23
Duplin	5	1	12	18	6	24
Durham	50	2	41	93	59	152
Edgecombe	1	-	2	3	1	4
Forsyth	57	9	60	126	35	161
Franklin	2	-	1	3	5	8

Table XXXII continued

County of Home Residence	Baccalaureate Programs	Associate Degree Programs	Diploma Programs	Sub-Total	Practical Nurse Programs	Grand Total
Gaston	4	3	31	38	14	52
Gates	1	1	1	3	1	4
Graham	-	-	1	1	-	1
Granville	5	1	8	14	7	21
Greene	-	-	2	2	1	3
Guilford	43	17	72	132	31	163
Halifax	6	3	6	15	4	19
Harnett	10	-	13	23	5	28
Haywood	2	2	12	16	20	36
Henderson	3	4	16	23	2	25
Hertford	3	6	3	12	2	14
Hoke	3	-	2	5	-	5
Hyde	-	-	1	1	-	1
Iredell	4	3	45	52	3	55
Jackson	2	-	4	6	1	7
Johnston	13	1	30	44	7	51
Jones	1	-	4	5	-	5
Lee	6	2	11	19	15	34
Lenoir	15	3	11	29	4	33
Lincoln	3	1	11	15	1	16
McDowell	4	2	6	12	-	12
Macon	2	-	2	4	-	4
Madison	-	-	1	1	2	3
Martin	2	1	4	7	4	11
Mecklenburg	44	9	108	161	29	190
Mitchell	1	-	10	11	-	11
Montgomery	1	-	4	5	-	5
Moore	6	2	11	19	4	23
Nash	14	5	18	37	5	42
New Hanover	14	8	27	49	16	65
Northampton	1	2	5	8	1	9
Onslow	12	-	9	21	11	32
Orange	9	-	6	15	7	22
Pamlico	1	-	-	1	-	1
Pasquotank	5	-	2	7	8	15
Pender	1	2	3	6	1	7
Perquimans	2	-	-	2	3	5
Person	3	1	4	8	7	15
Pitt	29	1	19	49	4	53
Polk	2	1	-	3	-	3

Table XXXII continued

County of Home Residence	Baccalaureate Programs	Associate Degree Programs	Diploma Programs	Sub-Total	Practical Nurse Programs	Grand Total
Randolph	7	-	30	37	20	57
Richmond	2	3	14	19	7	26
Robeson	6	1	24	31	6	37
Rockingham	4	3	11	18	1	19
Rowan	15	2	21	38	6	44
Rutherford	7	8	9	24	-	24
Sampson	7	1	10	18	3	21
Scotland	3	-	9	12	4	16
Stanly	7	-	19	26	-	26
Stokes	1	-	1	2	-	2
Surry	11	2	45	58	4	62
Swain	-	-	4	4	2	6
Transylvania	3	1	8	12	-	12
Tyrrell	-	-	2	2	-	2
Union	2	2	12	16	-	16
Vance	3	-	13	16	-	16
Wake	39	5	53	97	20	117
Warren	2	1	2	5	1	6
Washington	1	-	2	3	-	3
Watauga	4	-	1	5	1	6
Wayne	19	3	26	48	23	71
Wilkes	4	3	13	20	13	33
Wilson	6	-	19	25	10	35
Yadkin	2	1	12	15	3	18
Yancy	-	1	2	3	1	4
Unknown	-	-	39	39	-	39
TOTAL	664	164	1,407	2,235	587	2,822

Source: Questionnaire Survey, North Carolina Board of Higher Education, Summer, 1966.

TABLE XXXIII

OUT-OF-STATE STUDENTS IN NURSING PROGRAMS IN NORTH CAROLINA BY STATE, AS OF MARCH 31, 1966

State of Home Residence	Baccalaureate Programs	Associate Degree Programs	Diploma Programs	Sub-Total	Practical Nurse Programs	Grand Total
1. Alabama	3	-	1	4	-	4
2. Alaska	-	-	-	-	-	-
3. Arizona	1	-	-	1	-	1
4. Arkansas	1	-	-	1	1	2
5. California	5	-	1	6	-	6
6. Colorado	-	-	-	-	2	2
7. Connecticut	13	-	1	14	-	14
8. Delaware	6	-	1	7	-	7
9. Dist. of Columbia	12	-	1	13	-	13
10. Florida	28	4	25	57	-	57
11. Georgia	7	-	8	15	-	15
12. Hawaii	-	-	-	-	-	-
13. Idaho	-	-	-	-	-	-
14. Illinois	5	-	-	5	-	5
15. Indiana	1	-	2	3	-	3
16. Iowa	-	-	1	1	-	1
17. Kansas	1	-	-	1	-	1
18. Kentucky	2	-	3	5	-	5
19. Louisiana	-	-	-	-	-	-
20. Maine	-	-	-	-	-	-
21. Maryland	20	2	6	28	-	28
22. Massachusetts	4	-	1	5	-	5
23. Michigan	2	-	9	11	-	11
24. Minnesota	2	-	-	2	-	2
25. Mississippi	2	-	1	3	-	3
26. Missouri	2	-	-	2	-	2
27. Montana	-	-	-	-	-	-
28. Nebraska	-	-	-	-	-	-
29. Nevada	-	-	-	-	-	-
30. New Hampshire	-	-	-	-	-	-
31. New Jersey	51	1	7	59	-	59
32. New Mexico	1	-	-	1	-	1
33. New York	43	1	6	50	-	50
34. North Dakota	-	-	1	1	-	1
35. Ohio	8	1	5	14	-	14
36. Oklahoma	1	-	1	2	-	2
37. Oregon	-	-	-	-	-	-
38. Pennsylvania	43	1	7	51	1	52
39. Rhode Island	1	-	-	1	-	1
40. South Carolina	34	6	87	127	5	132

Table XXXIII continued

State of Home Residence	Baccalaureate Programs	Associate Degree Programs	Diploma Programs	Sub-Total	Practical Nurse Programs	Grand Total
41. South Dakota	-	-	-	-	-	-
42. Tennessee	4	-	22	26	1	27
43. Texas	1	-	3	4	-	4
44. Utah	-	-	-	-	-	-
45. Vermont	-	-	-	-	-	-
46. Virginia	55	13	44	112	4	116
47. Washington	-	-	-	-	-	-
48. West Virginia	2	-	11	13	-	13
49. Wisconsin	1	-	1	2	-	2
50. Wyoming	-	-	-	-	-	-
51. Territories	-	1	1	2	-	2
52. Foreign Countries	4	-	1	5	-	5
TOTAL	366	30	258	654	14	668

Source: Questionnaire Survey, North Carolina Board of Higher Education, Summer, 1966.

TABLE XXXIV

NORTH CAROLINA STUDENTS ENROLLED IN PROFESSIONAL NURSING SCHOOLS BY COUNTY LOCATION OF HOME RESIDENCE, AS OF MARCH 31, 1966

County of Home Residence	Total	Number Attending School: In The County	Number Attending School: In Adjacent Counties	Number Attending School: In Other Counties	Percent Attending School: In The County	Percent Attending School: In Adjacent Counties	Percent Attending School: In Other Counties
Alamance	49	--	14	35	--	28.6	71.4
Alexander	8	--	3	5	--	37.5	62.5
Alleghany	2	--	1	1	--	50.0	50.0
Anson	9	--	--	9	--	--	100.0
Ashe	3	--	--	3	--	--	100.0
Avery	3	--	--	3	--	--	100.0
Beaufort	25	--	2	23	--	8.0	92.0
Bertie	12	--	1	11	--	8.3	91.7
Bladen	6	--	3	3	--	50.0	50.0
Brunswick	4	--	--	4	--	--	100.0
Buncombe	50	19	3	28	38.0	6.0	56.0
Burke	30	--	4	26	--	13.3	86.7
Cabarrus	41	23	11	7	56.1	26.8	17.1
Caldwell	13	--	2	11	--	15.4	84.6
Camden	--	--	--	--	--	--	--
Carteret	11	--	--	11	--	--	100.0
Caswell	9	--	--	9	--	--	100.0
Catawba	35	4	14	17	11.4	40.0	48.6
Chatham	15	--	5	10	--	33.3	66.7
Cherokee	1	--	--	1	--	--	100.0
Chowan	3	--	1	2	--	33.3	66.7
Clay	1	--	--	1	--	--	100.0
Cleveland	33	6	10	17	18.2	30.3	51.5
Columbus	19	--	4	15	--	21.0	79.0
Craven	28	--	11	17	--	39.3	60.7
Cumberland	44	11	2	31	25.0	4.5	70.5
Currituck	1	--	--	1	--	--	100.0
Dare	--	--	--	--	--	--	--
Davidson	47	--	20	27	--	42.6	57.4
Davie	16	--	7	9	--	43.8	56.2
Duplin	18	--	3	15	--	16.7	83.3
Durham	93	31	19	43	33.3	20.4	46.3
Edgecombe	3	--	3	--	--	100.0	--
Forsyth	126	38	12	76	30.2	9.5	60.3
Franklin	3	--	1	2	--	33.3	66.7

Table XXXIV continued

County of Home Residence	Total	Number Attending School: In The County	In Adjacent Counties	In Other Counties	Percent Attending School: In The County	In Adjacent Counties	In Other Counties
Gaston	38	9	17	12	23.7	44.7	31.6
Gates	3	--	1	2	--	33.3	66.7
Graham	1	--	--	1	--	--	100.0
Granville	14	--	5	9	--	35.7	64.3
Greene	2	--	1	1	--	50.0	50.0
Guilford	132	29	20	83	22.0	15.2	62.8
Halifax	15	--	3	12	--	20.0	80.0
Harnett	23	--	4	19	--	17.4	82.6
Haywood	16	--	7	9	--	43.8	56.2
Henderson	23	12	2	9	52.2	8.7	39.1
Hertford	12	6	--	6	50.0	--	50.0
Hoke	5	--	--	5	--	--	100.0
Hyde	1	--	--	1	--	--	100.0
Iredell	52	21	26	5	40.4	50.0	9.6
Jackson	6	--	--	6	--	--	100.0
Johnston	44	--	18	26	--	40.9	59.1
Jones	5	--	--	5	--	--	100.0
Lee	19	--	--	19	--	--	100.0
Lenoir	29	5	5	19	17.2	17.2	65.6
Lincoln	15	--	12	3	--	80.0	20.0
McDowell	12	--	2	10	--	16.7	83.3
Macon	4	--	--	4	--	--	100.0
Madison	1	--	1	--	--	100.0	--
Martin	7	--	--	7	--	--	100.0
Mecklenburg	161	98	9	54	60.9	5.6	33.5
Mitchell	11	--	--	11	--	--	100.0
Montgomery	5	--	1	4	--	20.0	80.0
Moore	19	--	2	17	--	10.5	89.5
Nash	37	4	6	27	10.8	16.2	73.0
New Hanover	49	15	--	34	30.6	--	69.4
Northampton	8	--	2	6	--	25.0	75.0
Onslow	21	--	--	21	--	--	100.0
Orange	15	5	8	2	33.3	53.3	13.4
Pamlico	1	--	--	1	--	--	100.0
Pasquotank	7	--	--	7	--	--	100.0
Pender	6	--	4	2	--	66.7	33.3
Perquimans	2	--	--	2	--	--	100.0
Person	8	--	6	2	--	75.0	25.0
Pitt	49	24	10	15	49.0	20.4	30.6
Polk	3	--	--	3	--	--	100.0

Table XXXIV continued

		Number Attending School:			Percent Attending School:		
County of Home Residence	Total	In The County	In Adjacent Counties	In Other Counties	In The County	In Adjacent Counties	In Other Counties
Randolph	37	--	8	29	--	21.6	78.4
Richmond	19	1	1	17	5.3	5.3	89.4
Robeson	31	10	1	20	32.2	3.3	64.5
Rockingham	18	--	6	12	--	33.3	66.7
Rowan	38	8	5	25	21.0	13.2	65.8
Rutherford	24	--	7	17	--	29.2	70.8
Sampson	18	--	5	13	--	27.8	72.2
Scotland	12	--	--	12	--	--	100.0
Stanly	26	--	17	9	--	65.4	34.6
Stokes	2	--	1	1	--	50.0	50.0
Surry	58	19	6	33	32.8	10.3	56.9
Swain	4	--	--	4	--	--	100.0
Transylvania	12	--	5	7	--	41.7	58.3
Tyrrell	2	--	--	2	--	--	100.0
Union	16	--	13	3	--	81.2	18.8
Vance	16	--	--	16	--	--	100.0
Wake	97	11	14	72	11.3	14.4	74.3
Warren	5	--	--	5	--	--	100.0
Washington	3	--	--	3	--	--	100.0
Watauga	5	--	--	5	--	--	100.0
Wayne	48	--	6	42	--	12.5	87.5
Wilkes	20	--	10	10	--	50.0	50.0
Wilson	25	16	4	5	64.0	16.0	20.0
Yadkin	15	--	10	5	--	66.7	33.3
Yancey	3	--	--	3	--	--	100.0
North Carolina	2,196	425	447	1,324	19.4	20.4	60.2

Source: Questionnaire Survey, North Carolina Board of Higher Education, Summer, 1966.

TABLE XXXV

SELECTED CHARACTERISTICS OF NURSING SCHOOLS IN NORTH CAROLINA

Name of School	Percent of the 1965 Graduates Working in N. C.	Percent Negro 1966	Percent Single 1966	Percent of Students From: (1966)			
				In-County	Adjacent Counties	Other Counties	Out-of-State
Baccalaureate Programs							
Duke University Durham	29.6	-	97.7	1.9	0.4	10.0	87.7
East Carolina Univ. Greenville	71.4	-	93.0	10.5	7.4	70.6	11.5
Lenoir-Rhyne Col. Hickory	60.0	-	90.0	6.7	18.3	66.7	8.3
NC A & T State Univ. Greensboro	50.0	100.0	97.4	6.9	6.0	50.9	36.2
North Carolina Col. Durham	90.0	100.0	36.7	33.3	6.7	43.3	16.7
UNC at Chapel Hill Chapel Hill	52.1	0.4	92.1	2.1	11.2	65.4	21.3
UNC at Charlotte Charlotte	-	9.1	100.0	54.5	27.3	18.2	-
Winston-Salem State Winston-Salem	50.0	100.0	85.3	20.0	6.7	60.0	13.3
Diploma Schools							
Cabarrus Memorial Concord	93.1	-	91.4	21.9	20.0	52.4	5.7
Charlotte Memorial Charlotte	93.3	-	84.5	10.0	10.0	66.4	13.6
Community Wilmington	57.1	100.0	50.0	33.3	-	50.0	16.7
Davis Statesville	91.7	-	100.0	22.2	55.6	17.8	4.4
Forsyth Memorial Winston-Salem							
Gaston Memorial Gastonia	81.2	-	93.6	19.1	34.0	42.6	4.3
Hamlet Hamlet	73.7	-	94.4	1.4	5.6	51.4	41.6
High Point Mem. High Point	95.0	-	91.4	28.6	34.3	34.3	2.8

Table XXXV continued

Name of School	Percent of the 1965 Graduates Working in N. C.	Percent Negro 1966	Percent Single 1966	Percent of Students From: (1966) In-County			
				In-County	Adjacent Counties	Other Counties	Out-of-State
Highsmith-Raney Mem. Fayetteville	72.7	-	77.4	35.5	35.5	22.6	6.4
Lenoir Memorial Kinston	85.7	-	100.0	14.3	42.8	37.1	5.8
Lincoln Durham	100.0	73.0	100.0	2.7	13.5	51.4	32.4
Lowrance Mooresville	87.5	-	72.4	37.9	37.9	20.7	3.5
Martin Memorial Mount Airy	75.0	-	81.6	38.8	10.2	18.4	32.6
Memorial Mission Asheville	92.0	-	70.8	29.2	26.2	33.8	10.8
Mercy Charlotte	65.4	-	94.6	19.4	9.7	44.1	26.8
Mountain Fletcher	19.0	-	77.6	20.7	6.9	8.6	63.8
N. C. Baptist Winston-Salem	59.0	-	94.8	15.0	22.9	51.6	10.5
Park View Rocky Mount	100.0	-	97.4	10.5	23.7	60.5	5.3
Presbyterian Charlotte	84.5	-	96.1	25.8	20.0	35.1	19.1
Rex Raleigh	*	-	81.8	16.7	16.7	59.1	7.5
Reynolds Memorial Winston-Salem	62.5	100.0	97.7	*	*	*	11.4
Rowan Memorial Salisbury	100.0	-	95.0	13.3	21.7	56.7	8.3
Southeastern Gen. Lumberton	85.7	-	80.8	21.3	19.1	38.3	21.3
Walker Memorial Wilmington	100.0	-	86.7	46.7	13.3	33.3	6.7
Watts Durham	84.8	-	98.6	10.5	15.4	66.4	7.7
Wilson School Wilson	100.0	-	85.7	20.8	32.5	40.3	6.4

Table XXXV continued

Name of School	Percent of the 1965 Graduates Working in N. C.	Percent Negro 1966	Percent Single 1966	Percent of Students From: (1966)			
				In-County	Adjacent Counties	Other Counties	Out-of-State
A. D. Programs							
Central Piedmont Charlotte	-	-	93.9	8.2	20.4	57.1	14.3
Chowan College Murfreesboro	-	-	94.6	16.2	13.5	35.1	35.2
Gardner-Webb College Boiling Springs	-	-	82.8	20.7	20.7	44.8	13.8
UNC at Greensboro Greensboro	*	*	88.6	17.1	21.4	52.8	8.7
Wilmington College Wilmington	-	-	66.7	66.7	22.2	11.1	-
Practical Nurse Programs							
Asheville-Buncombe Asheville	94.7	36.4	39.4	66.7	24.2	9.1	-
Caldwell T. I. Banner Elk	75.0	9.1	81.8	-	18.2	54.5	27.3
T. I. of Burlington Burlington	93.3	21.4	35.7	85.7	7.1	7.2	-
Carteret I. E. C. Morehead City	-	-	50.0	100.0	-	-	-
Central Piedmont Charlotte	92.1	61.7	48.9	61.7	19.1	10.6	8.6
James Sprunt Inst. Kenansville	100.0	8.3	25.0	41.7	58.3	-	-
Durham T. I. Durham	97.7	98.1	57.7	86.5	11.5	2.0	-
College of Albemarle Elizabeth City	100.0	19.0	71.4	38.1	19.0	42.9	-
Fayetteville T. I. Fayetteville	100.0	10.0	60.0	60.0	40.0	-	-
Gaston Memorial Gastonia	80.0	18.2	45.4	100.0	-	-	-
Wayne T. I. Goldsboro	90.5	22.2	52.8	50.0	36.1	2.8	11.1
Guilford T. I. Greensboro	100.0	16.2	40.5	81.1	18.9	-	-

Table XXXV continued

Name of School	Percent of the 1965 Graduates Working in N. C.	Percent Negro 1966	Percent Single 1966	Percent of Students From: (1966) In-County	Adjacent Counties	Other Counties	Out-of-State
Richmond T. I. Laurinburg	100.0	23.5	35.3	17.6	64.8	17.6	-
Lee County I. E. C. Sanford	95.8	16.7	37.5	62.5	33.3	4.2	-
Caldwell T. I. Lenoir	92.3	-	60.0	80.0	20.0	-	-
Lenoir County Comm. New Bern	100.0	21.4	50.0	92.8	7.2	-	-
Onslow I. E. C. Jacksonville	-	8.3	-	91.7	-	-	8.3
Randolph I. E. C. Asheboro	93.8	15.8	31.6	78.9	21.1	-	-
Pitt T. I. Roanoke Rapids	60.0	33.3	-	66.7	33.3	-	-
Rowan T. I. Salisbury	87.5	31.6	36.8	31.6	68.4	-	-
Cleveland I. E. C. Shelby	*	*	*	*	*	*	*
W. W. Holding T. I. Wake	100.0	21.9	53.1	59.4	31.2	9.4	-
Pitt T. I. Washington	72.2	20.0	53.3	40.0	33.4	13.3	13.3
Watts Hospital Durham	86.1	-	58.6	48.3	44.8	6.9	-
Asheville-Buncombe Waynesville	75.0	5.6	16.7	88.9	11.1	-	-
Wilkes Comm. Col. Wilkesboro	-	16.7	25.0	91.7	8.3	-	-
Cape Fear T. I. Wilmington	93.3	41.2	35.3	94.1	5.9	-	-
Wilson T. I. Wilson	-	33.3	-	50.0	50.0	-	-
Forsyth T. I. Winston-Salem	98.0	18.4	44.9	69.4	30.6	-	-

*Data not Available

-Represents zero or not applicable

Source: Questionnaire Survey, North Carolina Board of Higher Education, Summer, 1966

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